REPORT RESUMES

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VOCATIONAL EDUCATION AND INTERGOVERNMENTAL FISCAL RELATIONS IN THE POSTWAR PERIOD.
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INTERGOVERNMENTAL FISCAL RELATIONS ON THE NATIONAL, STATE, AND LOCAL LEVELS WAS THE FOCUS OF THIS STUDY ON VOCATIONAL EDUCATION. A HISTORY OF FEDERAL GRANTS-IN-AID TO VOCATIONAL EDUCATION WAS TRACED FROM THE SMITH-HUGHES ACT OF 1917 TO THE VOCATIONAL EDUCATION ACT OF 1963. THE SPECIFIC AREAS INVESTIGATED WERE (1) THE POSSIBILITY OF IMPROVED PROCEDURES FOR THE ALLOTMENT OF FEDERAL FUNDS AND (2) THE EVALUATION OF THE EXTENT TO WHICH FEDERAL AID HAS STIMULATED STATE AND LOCAL EXPENDITURES FOR VOCATIONAL EDUCATION. RECOMMENDATIONS AND CONCLUSIONS OF THE AUTHORS INCLUDED--(1) PROVISION FOR ALL FEDERAL AID IN THIS AREA SHOULD BE CONSOLIDATED UNDER THE VOCATIONAL EDUCATION ACT OF 1963, (2) STATE-LOCAL SPENDING SHOWED NO PERCEPTABLE PATTERN OF RESPONSE WHEN FEDERAL ALLOTMENTS WERE INCREASED IN SOME STATES AND DECREASED IN OTHERS, (3) IF PREVIOUS VOCATIONAL-EDUCATION BILLS ARE TO BE RETAINED, ALLOTMENTS BASED ON POPULATION SHOULD USE ANNUAL STATISTICS RATHER THAN DECENNIAL STATISTICS, (4) POPULATION ESTIMATES SHOULD BE ADJUSTED FOR MILITARY PERSONNEL AND THOSE ENROLLED IN COLLEGES AND UNIVERSITIES, AND (5) FUND MATCHING REQUIREMENTS FOR THE STATES, ALLOTTED EXTRA FUNDS AFTER POPULATION EQUALIZATION, SHOULD BE EASED. (FM)

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VOCATIONAL EDUCATION AND INTERGOVERNMENTAL FISCAL RELATIONS IN THE POSTWAR PERIOD

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Bruce F. Davie and Philip D. Patterson, Jr.

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CHAPTER 1

INTRODUCTION

Passage of the Smith-Hughes Act in 1917 inaugurated federal support of vocational education and marked the first time in the more than fifty years since the enactment of the Land Grant College program that the federal government embarked on a policy of providing financial aid for education to states and localities. This policy of federal support has been maintained ever since. Golden anniversaries give rise to reassessments of the past, evaluations of the present, and recommendations for the future: studies of vocational education's past, present, and future can utilize the specialized approaches of several disciplines. The approach followed here is that of economics with a special emphasis on intergovernmental fiscal relations. Our system of government involves complex relationships among its three levels -- federal, state, and local. Whenever these relationships entail or affect financial flows they are to be included within the area of intergovernmental fiscal relations. The federal programs for vocational education, from the Smith-Hughes Act to the Vocational Education Act of 1963, are grants-in aid which exemplify such fiscal relationships. The major aspects of intergovernmental fiscal relations as they pertain to vocational education are discussed in the first section of this introductory chapter. The second section provides an overview of this study.

1.1 Major Issues of Intergovernmental Fiscal Relations Inherent in Grant-in-Aid Programs

Grant-in-aid programs have evolved to solve two problems inherent in a federal structure of government. One is the conflict between the desire to meet national objectives and the commitment to maintain a system of decentralized government. The other is the divergence between local need and local fiscal capacity. The mix in emphasis on the one problem or the other varies as among grant-in-aid programs. The Interstate Highway System is a good example of a grant-in-aid program designed to resolve a conflict between a national desire for a modern highway for defense purposes and to accomodate the needs of interstate travelers and retention of highway construction as the responsibility of the states. Recent proposals for federal grants to the states, untied to specific programs, is an example of the desire to reduce the gap between local needs and local ability to pay for government expenditures. The fifty year history of federal grants-in-aid for vocational education reveals concern with both problems.

The specific details of any grant-in-aid program reflect the resolution of a logical sequence of issues. Initially, a determination of national need must be made. Often national needs are not simply the sum of state-local needs. Voters and their representatives at the local level may not see the need for programs, the benefits of which accrue largely outside the boundaries of their locality. In many cases, the benefits of vocational education are of this nature. A need determined through a political process usually can be satisfied only at the expense of other public and private desires. Thus a decision must be made at the federal level as to the extent of the national government's financial commitment to a specific program. Once such a decision has been made, means must be adopted for apportioning federal funds among states or localities. There are several alternatives. Federal funds may be used to support particular projects, proposals for which are submitted to a federal agency for approval, as in the case with Title III of the Elementary and Secondary Education Act of 1965. An alternative is to make federal payments to states or localities by multiplying a measure of program need by fixed dollar amounts; this is done in the cases of the Elementary and Secondary Education Act of 1965 (Title I) and the Impacted Area Program. Another alternative is to divide a fixed federal appropriation among the states. This can be accomplished in three different ways -- by making state shares, expressed as a percent of a federal appropriation, proportionate to (1) state expenditures for a particular program, (2) some quantitative measure of the program's extent, e.g. pupils enrolled, or (3) potential demand for the program, e.g. population in a particular age group. Federal grant-in-aid programs for vocational education are of the latter type. That is, federal appropriations are divided among the states on the basis of potential demand as measured by particular population data. Federal and state monies for vocational education are often distributed by the states to local school districts on the basis of either expenditures or enrollments. Whatever means are used to apportion funds among states or localities, the allotments so determined can be adjusted to reflect relative state or local fiscal capacity. The Vocational Education Act of 1963 provides for such an adjustment.

Another major issue concerns conditions imposed on the governments which receive grants-in-aid. Use of federal funds may be conditional upon state-local program expenditure of specified magnitudes. For example, the vocational education program requires state-local expenditures to at least equal the federal funds used. Conditions are also imposed with respect to qualitative aspects of the programs. Beginning with the Smith-Hughes Act for example, states have been required to submit State Plans to the U.S. Commissioner of Education for approval before federal funds can be received.

Finally, there is the issue of the total impact of a particular grant-in-aid program on the recipient governments. One aspect of this impact may be a distortion of decision-making at the local level. Localities may choose an expenditure pattern which favors program areas for which grants-in-aid are received at the expense of unaided program areas which may actually be more appropriate. If, for example, the federal government will pay ninety percent of the cost of a freeway system a locality may not even examine a rapid transit system as a possible solution to its transportation problem. Similar distortions may arise as between two similar grant-in-aid programs when more stringent matching requirements are associated with one of the programs. There is also the question of the extent to which grant-in-aid funds stimulate additional spending in the designated program area by the recipient government or the extent to which these funds merely substitute for expenditures which would in any event have been made.

1.2 An Overview of This Study

The issues outlined above will be analyzed in detail in the following two chapters. In Chapter 2 the Smith-Hughes and George-Barden Acts are considered from the point of view of intergovernmental fiscal relations during the 1947-1964 period. As an aid to this discussion Appendix Figure I was developed to illustrate these relationships. A section is devoted to the study of the way in which federal appropriations for these two acts are allotted among the states. The two basic methods by which states allot funds to local areas are also considered. A major portion of the chapter is devoted to analyzing the fiscal response of states to federal funds earmarked for vocational education. At this point, and in other sections of this paper, the states of Maryland, Pennsylvania, Virginia, and West Virginia are used as examples. The technical education programs initiated in 1959 under Title III of the George-Barden Act are examined in the final section of the chapter.

Initial funding for the Vocational Education Act of 1963 occurred in 1965. To illustrate the intergovernmental fiscal relations associated with this new act Appendix Figure II was drawn. The major emphasis in this chapter is on the allotment formula which is a part of the act. A computer program was written to simulate this formula and to determine the state-by-state effects of various alternatives. This program was also used to project state shares for 1970 and 1975. The response of the states to this new grant-in-aid program during its first year of funding is studied in the concluding section of Chapter 3.

Conclusions and recommendations make up the final chapter. Excerpts from relevant pieces of legislation and rules and regulations published by the U.S. Office of Education are contained in Appendix B.

CHAPTER 2

THE SMITH-HUGHES AND GEORGE-BARDEN ACTS, 1947-1964

The George-Barden Act was passed on August 1, 1946, authorizing substantial increases in federal appropriations for vocational education. This legislation reflected public recognition of the contribution made by vocational education during the war and Congressional concern with the problem of full employment. Funds were first appropriated under this new act for the 1948 fiscal year. This study takes as its starting point the prior year, fiscal 1947.

The federal program of vocational education initiated by the Smith-Hughes Act evolved rather slowly, from initial federal expenditures of $832 thousand in 1918, to over $21 million in 1947. During this period the provisions of the Smith-Hughes Act were expanded by additional legislation.* These acts increased the authorized level of federal expenditures without affecting the basic nature of the federal government's program. A major change was made however, with the passage of the Vocational Education Act of 1963. In this chapter the intergovernmental fiscal relations associated the vocational education grant-in-aid program over the 1947 to 1964 period will be studied. This latter year marked the end of an era- funding under the 1963 Act began in 1965.

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* For the evolution of vocational education legislation see Grant Venn, Man, Education, and Work (Washington, D.C.: American Council on Education, 1964).

2.1 Basic Concepts and Terminology

The fiscal aspects of a grant-in-aid program must be analyzed in terms of the basic concepts embodied in federal legislation. During the 1947-1964 period the Smith-Hughes and George-Barden Acts set the pattern for vocational education in the United States. Three specific programs were initiated by the Smith-Hughes Act - agriculture, home economics, and trades and industry; funds were also provided for teacher education. A program in distributive occupations was added in the 1930's, and during the period being studied here, programs in practical nursing, fishery occupations, and technical education were included (see Appendix B). The concept of program area provides a framework for reporting expenditures. Under the terms of these acts federal funds are appropriated by program area. These appropriations are divided among states; the amounts received by a state are called allotments. A state's allotment for a program area can only be used to reimburse state-local expenditures for the same program area.

The matching requirement is another basic concept. States are required to match any expenditure of federal allotments for each program area with at least an equal amount of state and/or local government spending in the same program area. Thus total expenditures for vocational education can be divided into federal, state, and local components. This has been done in Table 2.1.1 for the 1947-1964 period. (All designations of years in this report refer to fiscal years.)

The expenditure data reported in Table 2.1.1 are taken from U.S. Office of Education publications.* These are expenditures reported by the states and do not necessarily represent total spending on vocational education in the program areas supported by the federal government. No spending on vocational education which does not qualify for federal support is included. Enrollment data are also presented in these publications. Because these enrollment data are not standardized with respect to pupil time, they cannot be used for analytical purposes.

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* This annual publication was entitled Digest of Annual Reports of State Boards for Vocational Education between 1947 and 1962. In 1963 the title was changed to Vocational and Technical Education.

TABLE 2.1.1

VOCATIONAL EDUCATION EXPENDITURES, SMITH-HUGHES AND GEORGE-BARDEN ACTS, BY LEVEL OF GOVERNMENT, 1947 to 1964

	Expenditures (millions of dollars)					Percent Distribution by Level of Government			
YEAR	Total[1]	Federal	State& Local	State	Local	Federal	State& Local	State	Local
1947	83	21	62	22	40	25	75	27	48
1948	103	26	77	26	51	25	75	25	50
1949	115	26	89	30	58	23	77	27	50
1950	129	27	102	41	62	21	79	32	47
1951	137	27	110	44	66	20	80	32	48
1952	146	26	120	48	73	18	82	33	49
1953	146	25	121	52	68	17	83	36	47
1954	151	25	126	55	71	17	83	36	47
1955	165	30	135	58	77	18	82	35	47
1956	176	33	143	62	81	19	81	35	46
1957	191	37	154	68	86	19	81	36	45
1958	210	39	171	72	99	19	81	34	47
1959	228	41	187	80	107	18	82	35	47
1960	239	45	194	82	111	19	81	35	46
1961	254	48	206	89	117	19	81	35	46
1962	284	51	232	104	128	18	82	37	45
1963	309	55	254	112	142	18	82	36	46
1964	333	55	278	125	153	17	83	38	45

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[1] Components may not add to total because of rounding.

SOURCE: Digest of Annual Reports.

One final bit of terminology: the term state is used in this study to mean a State of the Union, the District of Columbia, Puerto Rico, Virgin Islands, Guam, or American Samoa, except that under the Smith-Hughes Act the term does not include the District of Columbia, Virgin Islands, Guam, or American Samoa.

2.2 Intergovernmental Fiscal Relations: An Overview

Appendix Figure 1 graphically summarizes the intergovernmental fiscal relations associated with the Smith-Hughes and George-Barden Acts. Data for 1964 has been used for illustrative purposes; financial data for other years could be put into this same schema. The upper portion of the figure has been divided horizontally in two. The first segment represents legislative and budgetary processes and the second allotment and expenditure processes. Vertically the figure is divided into federal, state, and local sections. The processes represented in the uppermost portion of the figure have been simplified, particularly at the state and local levels.

At the federal level there are three participants- Congress, the Bureau of the Budget (BoB), and the Department of Health, Education, and Welfare - Office of Education(HEW-OE). There are two types of Congressional legislation represented: permenent (denoted by heavy lines) authorizations included in the Smith-Hughes and George-Barden Acts* and annual (denoted by light lines) appropriation acts which provide federal funds up to the limits set for each program area in the authorizing legislation. The influence of BoB and HEW-OE on the permanent legislation is indicated by open arrows. The influence of [illegible] their annual budget recommendations is shown by heavy arrows. HEW-OE may influence annual appropriations either working through BoB or directly.

The appropriated funds are allotted to the states by OE using the allotment formulas which are a part of the Smith-Hughes and George-Barden Acts. These formulas are used to allot state shares of the federal appropriation on the basis of specific population data. Since this allotment process is a major aspect of intergovernmental fiscal relations it will be analyzed in more detail in section 2.3. For a state to use any of its basic federal allotments, determined in this manner, a State Plan must have been approved by OE. Once approved this plan becomes permanent, though amendments may be submitted for approval. A state, if unwilling or unable to use the total amount, may release to OE a portion or all of its basic allotments of George-Barden funds. OE reallots these funds, within specific program areas, to other states which request additional federal support. Funds not reallotted because of insufficient requests or inopportune timing revert to the U.S. Treasury as appropriated funds cannot be carried over from one fiscal year to the next. Reallotted funds and basic allotments not released become final federal allotments.*

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* Supplemental Acts were passed to include the four outlying areas. (See the vocational education acts listed in Appendix A) Amendments to the Smith-Hughes Act authorizes $105,000 for Puerto Rico: $30,000 for agriculture, $60,000 for home economics, and $15,000 for teacher training. Puerto Rico is treated like a state under the George-Barden Act and shares federal funds on the basis of its population in the specified categories. A fixed amount of $80,000 is authorized for American Samoa under the George-Barden Act. Guam receives an authorization of $30,000 and the Virgin Islands receives $40,000 under Title I of the George-Barden Act, and both share Title II and Title III funds in the same manner as states.

In accordance with the State Plan final federal allotments are used to reimburse state and/or local expenditures for vocational education. The State Plan influences, and is influenced by, state legislation. Such legislation may authorize appropriations of state funds for vocational education as well as structuring the state's program in terms of the relative roles of the state vis-a-vis localities. These laws may specify formulas for allotting state aid among localities. These formulas are discussed in more detail in Section 2.3. Similarly allotment criteria may be included in the State Plan to distribute all or some portion of final federal allotments to localities for reimbursing their expenditures. In addition, localities may appropriate funds of their own to be spent on vocational education.

In the lower portion of Figure I reported expenditures for federally reimbursable programs of vocational education are classified as to source of funds - federal, state, or local. Within these classifications expenditures are identified by program areas. Federal funds are in part expended directly by the states and the remainder is either distributed to, and expended by localities, or reverts to the Treasury. Reporting procedures do not distinguish between state and local expenditure of federal funds hence the box in which these expenditures are listed straddles the line between states and localities. Similarly, state funds may be expended for federally reimbursable programs either directly by the state or through localities and likewise are not reported separately. The source of reported local expenditures for reimbursable programs is clearly the localities themselves. The Smith-Hughes and George-Barden Acts require that combined state and local expenditures for reimbursable programs at least match the federal funds expended, program by program and state by state.

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* Basic allotments not released and not retained as final allotments revert from a state of limbo to the U.S. Treasury.

Not all state and local expenditures on federally reimbursable programs are reported. Some local vocational education expenditures are paid for by student tuition and fees, but these cannot, under the terms of OE regulations, be used to match federal funds and are therefore not reported. Local expenditures out of regular revenue sources, including state aid, may also be made for federally reimbursable programs but go unreported. Some expenditures of state funds made at the state level may also be excluded in reports made to OE. States may leave unreported some expenditures, either at the state or local level, so that additional federal funds may be easily matched at some future date or in order to increase program flexibility. This matter will be discussed further in section 2.4. Given that there is no fiscal reward for substantial overmatching, states and localities are perhaps reluctant to devote the effort necessary to fully report total expenditures on federally reimbursable programs, especially when costs are spread over several programs some of which may not qualify for federal support. Many other vocational education expenditures are not eligible for federal reimbursement under the Smith-Hughes and George-Barden Acts. Both states and localities make such expenditures but they go unreported to OE.

Appendix Figure I has shown the flow of federal appropriations through a complex network of intergovernmental fiscal relations. Such an exercise puts the known information concerning the fiscal aspects of vocational education in a framework which illustrates some limitations of these data. The magnitude of student tuition and fees is unknown, the extent to which reported expenditures approximate total expenditures is not known, and no attempt is made to report on nonreimbursable programs. The full use of federal funds for the purposes intended by Congress would require that no part of the appropriations be returned to the U.S. Treasury. OE makes no attempt in its published data to identify these reversions to the Treasury either by program area or by state. Such an identification would aid in evaluating the total federal program. This matter is analyzed further in the context of the technical education program in section 2.5.

2.3 Allotment Formulas

Federal Allotments by Program Area

Smith-Hughes and George-Barden Act funds are allotted among the states to reimburse expenditures for the eight different program areas. Federal funds appropriated for each program area are, in most cases, divided among the states on the basis of specific population variables. Since the federal appropriation for each program area is fixed, changes in population variables in any one state affect the shares received by all other states. The details of these allotment formulas are summarized in Table 2.3.1.

The population variables used to allot Smith-Hughes and George-Barden appropriations are taken from the decennial census. As a result, states experience relatively large once-over changes in their allotments, as accumulated demographic changes have their effect only once every ten years. This matter will be taken up in more detail in Section 2.4.

The provision of a minimum state allotment for each program area of the Smith-Hughes and George-Barden Acts causes total authorizations to exceed the fixed authorizations of the act for all the program areas except practical nursing and technical education. For example, the George-Barden Act authorizes the appropriation of additional funds sufficient to make up the difference between the minimum amounts and calculated state allotments that are less than these minimums. Additional appropriations to make up minimums are not used for Titles II and III. Under these titles the funds needed to assure all states the minimum are collected by proportionately reducing the allotments to all states above the minimum, though at the 1964 level of funding such an adjustment was unnecessary.

In the case of both Title II and III of the George-Barden Act, the practical nursing and technical education programs, allotments are based on state shares of total appropriations for all five of the George-Barden Title I programs. In effect this means that 35 percent of the federal appropriation is allotted on the basis of farm population, 28 percent on rural population, 28 percent on nonfarm population, and nine percent on total population.*

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* These percentages are modified slightly by the federal appropriation for the fishery occupations program included in Title I.

TABLE 2.3.1

SUMMARY OF ALLOTMENT PROCEDURES, SMITH-HUGHES AND GEORGE-BARDEN ACTS

	Total Authorizations	Basis on Which State Allotments Are Calculated	Minimum State Allotments	Total Basic Allotments, 1964[e]
Smith-Hughes Act[a]	$7,105,000	--	$30,000	$7,266,455
Agriculture	3,030,000	Rural population	10,000	3,046,355
T and I and Home Economics	3,060,000	Urban population	10,000	3,101,787
Teacher Training	1,015,000	Total population	10,000	1,118,313
George-Barden Act				
Agriculture	10,000,000	Farm population	40,000	10,309,997
Distributive Occupations	2,500,000	Total population	15,000	2,602,298
Home Economics	8,000,000	Rural population	40,000	8,182,825
Trades and Industry	8,000,000	Nonfarm population	40,000	8,215,703
Fishery Occupations	375,000	b	none	180,000
Total, Title I[c]	23,535,000	--	135,000	29,610,823
Health, Title II	5,000,000	Title I Shares	d	5,000,000
Technical, Title III	15,000,000	Title I Shares	d	15,000,000

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[a] Includes $105,000 authorized and appropriated to Puerto Rico for the following program areas: agriculture ($30,000), trades and industry and home economics ($60,000), and teacher training ($15,000). These allotments are not based on population variables.

[b] State percentage shares of the federal appropriation for fishery

Table 2.3.1 continued

b cont.

occupations are equal to the average of state percentage shares of the following five measures of the extent of the fishing industry in each state: 1) pounds of fish landed, 2) dollar value of fish landed, 3) number of regular fishermen, 4) number of shoreworkers, and 5) dollar value of manufactured fish products.

[c] George-Barden Title I authorizations and appropriations include $160,000 for the three outlying areas of American Samoa, Guam, and the Virgin Islands which is not identifiable by program area.

[d] Minimum state allotments are in effect set by the provisions for minimums in the four program areas under Title I. In 1964 these effective minimums for the states, excluding the outlying areas, were $22,796 for Title II and $68,387 for Title III.

[e] SOURCE: Vocational and Technical Education, 1964.

Given that the purpose of Title III is to increase the output of "highly skilled technicians necessary for the national defense," funds might well be channelled to states in proportion to, say, value-added in defense related industries. Because of the actual allotment process used, as Grant Venn has put it, some strange distributions result.

> In 1962, California, for example, which has very high student, industrial, and institutional potential for technical education, received about the same title III allotment as Texas. Mississippi's allotment was nearly three times that of Connecticut. Georgia's was a third more than that of Florida. Rhode Island's was smaller than Alaska's. Defense-industry-minded Washington's was less than half of Tennessee's, Oregon's was not much larger than North Dakota's.*

The fishery occupations program is an interesting example of the consequences which result from treating a federal appropriation for a narrowly defined purpose as a pie to be divided among the states. The legislation calls for the allotment among the states "on an equitable basis, as determined by the United States Commissioner of Education after consultation with the Secretary of the Interior, taking into account the extent of the fishing industry of each State and Territory as compared with the total fishing industry of the United States (including Territories)." The procedure used is to base a state's allotment on the average of that state's percentage of national totals for (1) pounds of fish landed, (2) value of fish landed, (3) number of regular fishermen, (4) number of shore workers, and (5) value of manufactured fish products. Thirty-two states, including Puerto Rico, received basic allotments under this procedure. Arkansas represents proof of the proposition that if you divide a small pie into small pieces, some recipients end up only with crumbs; its basic allotment for 1964 was $468. Sixteen states received final allotments and only eleven states had any expenditures for fisheries occupations. Only about half the federal appropriation of $180,000 for this purpose was finally spent.

The variables used to allot funds for fishery occupations have a feedback effect on state allotments for health occupations and technical education. For example, in 1964, Alaska, Nevada, New Hampshire, Vermont, and Wyoming each received the same minimum allotments for the major George-Barden, Title I, program areas - agriculture, home economics, trades and industry, and distributive occupations. Alaska, however, received a basic allotment of $16,128, for fisheries occupations and as a result received an additional allotment of $8,170 for technical education over that received by the other four states. It is not intuitively obvious why tons of fish caught in a state should influence the availability of federal funds for training highly skilled technicians, or, for that matter, practical nurses.

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* Man, Education, and Work, American Council on Education, 1964, p. 117.

The allotment procedures just described, when coupled with the requirement that allotted funds be spent only for specific program areas, make the entire vocational education program quite rigid. A step toward flexibility was introduced when the concept of reallotment was introduced as part of Title II of the George-Barden Act in 1956. This concept was extended to all the George-Barden program areas. Under the reallotment provision states may release all or a part of their basic allotment for a particular program area. The Office of Education then redistributes released funds to other states requesting additional monies, though such funds can only be expended within the same program area.

State Allotment of Federal and State Vocational Education Funds to Localities

Most expenditures for vocational education are made at the local level hence federal funds received by the states are usually distributed to localities. Individual states may, in addition, provide aid to localities by distributing state appropriations and earmarked revenues for vocational education. (See Appendix Figure I.) In making distributions to localities states confront the same major issues of intergovernmental fiscal relations which were described, in section 1.1, in the context of federal-state relations. The only significant difference is that states are free to shape the structure of local government whereas the federal government must accept as given the basic structure of federalism. States must measure the relative needs for vocational education in local areas, make assessments of local fiscal capacity, and maintain statewide educational standards.

There are a variety of means used by the states to distribute federal-state funds to localities for specific program areas; within the confines of this study it was impossible to study in detail the means used in every state. An overall summary of state procedures was made as a part of the 1962 Census of Governments. Another source of information on this point is the series of pamphlets published by the School Finance Section, Bureau of Educational Research and

Development, U.S. Office of Education which describe the public school finance programs of the individual states for 1961-1962.* The simplest case is where the state operates the entire educational system and hence makes no distribution of either federal or state funds to localities. This is the case in Hawaii, the District of Columbia, and the outlying areas. Most states distribute state funds, as well as federal, to localities. In making such distributions most states do so by reimbursing each locality in proportion to its expenditures for vocational education. Some states base the distribution on pupil enrollments in particular programs. In some cases distinction is made between secondary and adult or day and evening classes. Sometimes federal funds are distributed separately from state funds. If states distribute federal-state funds to localities in proportion to expenditures, those local areas with relatively greater fiscal capacity are favored; when funds are distributed on a per pupil basis poor localities receive relatively more aid.

The issues involved in state allotment procedures will be taken up again in section 3.4 where the initial response to the Vocational Education Act of 1963 is discussed. As long as the Smith-Hughes and George-Barden Acts were the only federal programs supporting vocational education, state allotment procedures could be relatively simple, using expenditures or enrollments to make distributions to localities. This was the case since no federal funds could be used to reimburse construction expenditures and because funds had to be spent for specific program areas.

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*State Payments to Local Governments, Census of Governments, 1962, Bureau of the Census, 1963.

2.4 State Responses to Changing Federal Allotments

As indicated in Chapter 1, a major issue concerning grants-in-aid is the extent to which federal funds stimulate state-local spending. Most grant-in-aid programs, including the Smith-Hughes and George-Barden Acts, are designed to stimulate state-local spending for a particular purpose; [illegible] matching requirements are used to assure that at least a minimum amount of state-local spending takes place. In this section the reported expenditure data for vocational education will be analyzed showing the fiscal response of the states to the availability of federal funds.

The hypothesis that federal aid stimulates state-local expenditures on vocational education can be statistically tested by regression analysis using time series data or cross section data. With a time series test, a positive relationship exists between state-local expenditures and federal aid if over time state-local expenditures increase when federal aid increases and decrease when federal aid decreases. With a cross section test for a particular year a positive relationship exists if states which receive more federal aid have larger state-local expenditures. The time series test can determine if for one state, or all states taken together, the level of (or changes in) state-local expenditure are related to and therefore, possibly dependent on the level of (or changes in) federal aid. The cross section test can determine if state differentials in the level of (or changes in) state-local expenditure are related to and therefore, possibly dependent on differentials in the level of (or changes in) federal aid. In either time series or cross section analysis appropriate measures of state-local expenditures and federal aid must be used.

In the analysis which follows the expenditure data reported in the Digest of Annual Reports will be used as no other expenditure data are available. It is widely recognized that reported state-local expenditures for vocational education are but a part of the actual total of such expenditures.*

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* See, for example, the Panel of Consultants on Vocational Education for the Department of Health, Education, and Welfare, Education for a Changing World of Work (Washington, D.C.:1963), p. 7.

Since the federal legislation only requires that the expenditure of federal funds be matched dollar for dollar by state-local funds the states need not report total expenditures. Undoubtedly a considerable effort would be involved in precisely allocating overhead costs to vocational education programs and in identifying all operating costs. When additional federal funds become available to a state, and must be matched, expenditures which were previously unreported can be declared as matching funds. States are encouraged by federal regulations to at least maintain the level of expenditures for each program area (see Appendix B). If, however, a state has unreported expenditures in a particular program area these expenditures could be cut back and transferred to another program where it might be required for matching purposes.

The data published in the Digest of Annual Reports accurately portray the amount of federal aid using three separate measures - basic allotments, final allotments, and expenditures. The distinction between basic and final allotments is relevant for the period since 1957 and pertains only to George-Barden funds. Expenditures are less than final allotments if a state does not spend all of its final allotments. All three of these measures of federal aid are used in the analysis which follows.

Response Over Time

The sum of basic allotments for all states increased from \$21.8 million in 1947 to \$56.9 million in 1964.* The ratio of total federal expenditures to total final allotments ranged from a low of 92.7 percent in 1959 to a high of 98.5 percent in 1954 and 1955. The aggregate of reported state-local expenditures increased from \$62 million to \$278 million over the 1947-1964 period. The expenditures of the three levels of government for vocational education were given in Table 2.1.1. The proportion of total vocational education expenditure borne by the local governments remained relatively constant over the period, ranging from 45 to 50 percent. Most of the expenditure trade-off occurred between the federal government and the states. As federal expenditures declined from 25 percent of the total in 1947 to 17 percent in 1964, state expenditures increased from 27 percent to 38 percent. State expenditures increased every year regardless of the movement of federal allotments. Local expenditures experienced only one decline during the period and this occurred in 1953 when federal allotments and expenditures were in the fifth year of a six-year period of gradual decline.

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*The only difference between the sum of basic and final allotments for all states is the small amount which may revert to the U.S. Treasury in the reallotment process. See above, page 10.

The annual rate of growth in total vocational education expenditures in the 1947-1964 period was 8.5 percent as shown in Table 2.4.1. It is interesting to note that most of the growth was attributable to vocational education expenditures by state governments. State expenditures grew at a 10.7 percent annual rate over the period. The growth rate in local expenditure of 8.2 percent was slightly less than the growth of total expenditures. Federal expenditures showed an annual rate of growth of 5.8 percent.

Table 2.4.1 shows similar data for four selected states-Maryland, Pennsylvania, Virginia, and West Virginia. Over the 1947-64 period, Virginia had the greatest growth in total vocational education expenditures of the four states even though at a rate less than total expenditures in the U.S. as a whole. As noted above, most of the U.S. growth in vocational education expenditures over the period was at the state level. This was true in Maryland and Virginia also. In Pennsylvania the growth of local expenditures more than offset a decline in state expenditures. In 1957 Pennsylvania spent over $5 million in state funds on vocational education; in 1958 state expenditures were only a little over $1 million. Total state-local expenditures declined only slightly in 1958 because local expenditures increased tremendously from $2 million to $6 million to fill the void. In Maryland the reverse situation occurred in 1961 when state expenditures doubled from $.7 million to $1.4 million and local expenditures declined from $1.0 million to $.4 million. The switch in Maryland resulted from a new program of state support for vocational education enacted in 1961. West Virginia had a very small increase in federal expenditures over the period due to relative decline in population as reported by the 1950 and 1960 censuses.

A simple least-squares regression equation was used to estimate the relationship between aggregate state-local expenditures and federal expenditures over the 1947-1964 period. The results indicate a strong relationship using state-local expenditures as the dependent variable.* Little weight can be placed on this relationship since both federal expenditures and state-local expenditures tended to grow over time.

$$*SL = -\$33{,}958{,}000 + \underset{(0.3)}{5.28}\,F \quad , \; r^2 = .94$$

TABLE 2.4.1

VOCATIONAL EDUCATION EXPENDITURES, SMITH-HUGHES AND GEORGE-BARDEN ACTS, BY LEVEL OF GOVERNMENT, FOR THE U.S. AND SELECTED STATES, 1947 AND 1964

(Expenditures in thousands of dollars)

1947	U.S.	MD.	PA.	VA.	W.VA.
EXPENDITURE					
Total	83,252	981	5,608	2,508	990
Federal	21,087	251	1,280	494	318
State	22,180	316	3,334	1,089	197
Local	39,985	414	994	925	475
PERCENT DISTRIBUTION					
Federal	25.3	25.6	22.8	19.7	32.1
State	26.6	32.2	59.5	43.4	19.9
Local	48.1	42.2	17.7	36.9	48.0
1964					
EXPENDITURE					
Total	332,786	3,113	12,325	9,793	2,735
Federal	55,027	687	2,765	1,410	579
State	124,975	1,725	1,982	5,130	453
Local	152,784	701	7,578	3,253	1,703
PERCENT DISTRIBUTION					
Federal	16.5	22.1	22.4	14.4	21.2
State	37.6	55.4	16.1	52.4	16.6
Local	45.9	22.5	61.5	33.2	62.2
ANNUAL PERCENTAGE GROWTH, 1947-64					
Total	8.5	7.0	4.7	8.3	6.2
Federal	5.8	6.1	4.7	6.4	3.6
State	10.7	10.5	-2.1	9.5	5.0
Local	8.2	3.1	12.7	7.7	7.8

SOURCE: Digest of Annual Reports, 1947; Vocational and Technical Education, 1964.

A more valid test of the hypothesis that federal aid stimulates state-local expenditures can be made using data which reflects annual changes. The annual changes are shown in Table 2.4.2. The magnitude of annual changes in federal expenditures and state-local expenditures do not show any strong relationship to one another. In only ten of the 17 years between 1947 and 1964, did annual changes in state-local expenditures move in the same direction as annual changes in federal expenditures. In six of the nine years that annual changes in federal expenditures were larger than in the previous year, annual changes in state-local expenditures were also larger. In four of the eight years that annual changes in federal expenditures were smaller than in the previous year, annual changes in state-local expenditures were also smaller. A simple least-squares regression equation relating changes in state-local expenditures as a dependent variable with changes in federal expenditures as an independent variable yielded very poor results.* This indicates that year to year decisions by states and localities to spend for vocational education were affected very little by changes in the availability of federal aid.

As is always the case, data for the entire nation may fail to reveal important relationships in individual states. The relationship between state-local expenditures for vocational education and federal aid (as measured by federal expenditures) was examined for the four selected states. As was the case with the data for the entire nation, there was a significant relationship over the 1947-1964 period between the levels of these two variables in each of the states.**

As was argued above with respect to the national data, annual changes in state-local expenditures within a particular state in relationship to annual changes in federal aid constitute a better test of fiscal response. These data for the four states are given in Table 2.4.2. In all four states the magnitude of annual changes in federal expenditures and state-local expenditures do not show any strong relationship to one another.***

The above analysis of time series data suggests that

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* $\Delta SL = \$10{,}900{,}000 + \underset{(.78)}{.85}\,\Delta F, \quad r^2 = .07$

**The coefficients of determination (r^2) were as follows: Maryland: .56; Pennsylvania: .79; Virginia: .95, and West Virginia: .62. All are significant at the .01 level.

***The coefficients of determination(r^2) were as follows: Maryland: .26, Pennsylvania: .14, Virginia: .08, and West Virginia: .07. None are significant at the .01 level.

TABLE 2.4.2

ANNUAL CHANGES IN VOCATIONAL EDUCATION EXPENDITURES, FEDERAL AND STATE-LOCAL

	UNITED STATES		Four Selected States ($1,000)							
	($1,000,000)		MARYLAND		PENNSYLVANIA		VIRGINIA		W.VIRGINIA	
YEAR	Federal	State-Local	Federal	State-Local	Federal	State-Local	Federal	State-Local	Federal	State Local
1947	0	9	2	112	3	334	0	403	15	29
1948	5	15	59	324	277	144	131	324	115	256
1949	0	12	2	43	-26	-71	1	387	0	126
1950	1	13	-5	179	51	579	0	354	0	17
1951	0	8	9	66	-37	196	0	212	0	47
1952	-1	10	-16	-38	-46	801	-18	159	-8	187
1953	-1	1	-17	-332	-138	345	35	-228	-10	-19
1954	0	5	22	80	0	140	0	213	0	-3
1955	5	9	60	36	273	114	137	242	90	21
1956	3	8	38	193	164	172	76	231	42	-41
1957	4	11	40	112	139	264	103	418	66	204
1958	2	17	-2	0	126	-53	41	401	12	39
1959	2	16	66	309	184	733	59	490	0	65
1960	4	7	37	50	111	-101	116	376	43	137
1961	3	12	14	98	197	332	-6	508	10	16
1962	3	26	62	209	37	492	70	423	-40	107
1963	4	22	83	249	104	753	94	681	-68	195
1964	0	24	-16	118	69	391	76	1178	9	129

SOURCE: Digest of Annual Reports.

state-local spending for vocational education over the 1947-1964 period did not respond directly to changes in federal aid. Undoubtedly increasing enrollments and rising educational costs induced states and localities to spend more for vocational education even in years when federal aid was constant or declining. As a further investigation of the relationship between state-local spending and federal aid, state by state changes were identified over the 1948-1954 period. During these years total federal allotments declined from $27.1 million to $25.8 million and federal expenditures declined from $26.2 million to $25.4 million. This period is of further interest as 1953 was the year in which state allotments were readjusted to reflect the demographic changes of the 1940's.* Despite the decline in federal aid, state-local expenditures increased 62.4 percent. The individual states, however, demonstrated a great variety in their expenditure growth during this period as is shown in Table 2.4.3.** Idaho increased state-local expenditures by 178 percent, Delaware by 150 percent, Montana by 145 percent, Nevada by 148 percent, Oklahoma by 146 percent, and Oregon by 147 percent. Three states decreased their reported expenditures on vocational education. New Jersey's state-local expenditures declined by 54 percent, New York's by 15 percent, and Maryland's by 0.1 percent. Analysis of the data in Table 2.4.3 indicated no significant relationship between changes in federal aid and changes in state-local expenditures.

Variation in Response by State

Another onoe-over change in federal allotments to the states took place in 1962. The 1962 federal allotments were based on 1960 Census of Population data, whereas the 1961 federal allotments were based on 1950 Census of Population data. The total basic federal allotment for vocational education to all states increased by nearly 8 percent from 1961 to 1962, though this was entirely the result of a $3.8 million increase in allotments for Title III of the George-Barden Act. Smith-Hughes allotments and George-Barden Title I allotments remained nearly unchanged in the two years. It is the redistribution of these allotments brought about by once-over population changes that are analyzed here.

Basic federal allotments to each of the states under

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*See pages 12 through 16.

**The very large increases in federal expenditures reported for some states result from significant increases in the proportion of federal allotments actually spent.

TABLE 2.4.3 STATE-LOCAL AND FEDERAL VOCATIONAL EDUCATION EXPENDITURES, 1948 AND 1954 ($1,000)

	State-Local Expenditures			Federal Expenditures		
	1948	1954	% Change	1948	1954	% Change
UNITED STATES	77,139	125,870	63.2	26,200	25,419	-2.98
Alabama	1,507	2,187	45.1	717	671	-6.5
Alaska						
Arizona	348	755	116.9	170	170	0
Arkansas	1,449	2,425	67.3	543	492	-9.4
California	5,450	7,988	46.5	1,077	1,222	13.4
Colorado	471	1,128	139.4	221	217	-1.9
Connecticut	1,317	1,777	34.9	254	257	1.1
Delaware	188	471	150.5	145	159	9.6
D. of Columbia	154	277	79.8	87	97	11.4
Florida	1,728	3,821	121.1	344	393	14.2
Georgia	2,048	4,660	127.5	767	721	-6.0
Hawaii	435	687	57.9	165	159	-3.7
Idaho	233	648	178.1	160	164	2.5
Illinois	3,282	6,092	85.6	1,207	1,099	-9.0
Indiana	2,272	3,250	43.0	664	656	-1.3
Iowa	936	2,015	115.2	568	555	-2.3
Kansas	547	1,135	107.4	390	367	-5.9
Kentucky	1,047	1,546	47.6	704	681	-3.3
Louisiana	1,750	3,371	92.6	526	492	-6.5
Maine	259	333	28.5	169	158	-6.6
Maryland	1,054	1,052	-0.2	311	305	-2.0
Massachusetts	3,613	5,465	51.2	535	500	-6.6
Michigan	2,331	4,327	85.6	903	889	-1.6
Minnesota	1,336	2,853	113.5	574	572	-0.4
Mississippi	1,460	2,365	61.9	634	614	-3.2
Missouri	1,233	2,665	116.1	758	696	-8.2
Montana	235	576	145.1	165	164	0.7
Nebraska	556	971	74.6	305	288	-5.6
Nevada	74	183	147.2	74	134	81.0
New Hampshire	164	240	46.3	142	156	9.8
New Jersey	3,296	1,526	-53.8	546	500	-8.5
New Mexico	228	509	123.2	168	167	-0.6
New York	8,039	6,867	-14.6	1,851	1,562	-15.7
North Carolina	2,193	4,630	111.1	918	958	4.3
North Dakota	284	538	89.4	178	205	15.1
Ohio	2,124	3,474	63.5	1,171	1,110	-5.3
Oklahoma	1,446	3,558	146.0	552	439	-20.5
Oregon	453	1,119	147.0	221	363	64.2
Pennsylvania	4,473	6,462	44.4	1,556	1,361	-12.6
Rhode Island	133	220	65.4	117	115	-1.8
South Carolina	1,418	2,858	101.5	499	492	-1.5
South Dakota	239	529	121.3	162	202	24.6
Tennessee	1,537	3,127	103.4	711	715	.5
Texas	4,887	11,559	136.5	1,377	1,249	-9.3
Utah	632	804	27.2	170	166	-2.4
Vermont	164	300	82.9	142	156	9.8
Virginia	2,338	3,435	46.9	626	643	2.7
Washington	1,868	2,963	58.6	329	362	10.0
W. Virginia	929	1,285	38.3	433	414	-4.4
Wisconsin	2,662	3,320	24.7	634	615	-3.0
Wyoming	180	353	96.1	157	159	1.2

SOURCE: Digest of Annual Reports.

Smith-Hughes and George-Barden I showed varying amounts of change from 1961 to 1962 as indicated in Table 2.4.4. Both Smith-Hughes and George-Barden Title I basic allotments declined in 18 states, in 6 other states only Smith-Hughes basic allotments declined, and in 3 other states only Title I basic allotments declined. The remainder of the states increased their basic allotments under both acts or had no change in their basic allotments. The fact that the percent change in Smith-Hughes allotments and the percent change in George-Barden Title I allotments are not usually the same for a given state reflect the different population criteria used to allot federal funds under the two acts.* Smith-Hughes allotments were affected relatively more by the 1960 Census data; changes in federal allotments received by the states ranged from +47 percent to -17 percent whereas changes in allotments received by the states under Title I of George-Barden ranged only from +16 percent to -7 percent.

Regression equations using the 1961-1962 cross section data were run to test several hypotheses. Four equations were run using basic allotments as the independent variable and four using final allotments. In each set of equations both absolute and percent changes in federal allotments were tested, and state-local expenditure changes for 1961-1962 and 1962-1963 were used as the dependent variable. In none of the eight regression equations were the regression coefficients or the coefficients of determination significant at the .05 level. Thus changes in neither basic nor final federal allotments in 1962 had any influence on the changes in state-local expenditures in 1962 or in 1963 when the changes were measured either in absolute dollars or percentage terms.

A further cross-section analysis was performed using 1964 data. When the level of state-local expenditures was regressed against the level of federal expenditures, 78 percent of the variation of state-local expenditures was associated with variation in federal expenditures.** A large part of this degree of association was, of course, attributable to differences in state population. When state-local expenditures were deflated by population and regressed against federal expenditures, similarly deflated, a very much smaller portion of the variation in state-local expenditures was associated with variation in federal expenditure.***

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*See Section 2.3, especially Table 2.3.1.

**$SL = -\$566{,}040 + \underset{(0.43)}{5.64}\,F, \quad r^2 = .78$

***$SL/_P = .738 + \underset{(0.56)}{2.29}\,F/P \qquad r^2 = .26$

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TABLE 2.4.4 - PERCENT CHANGES IN SMITH-HUGHES AND GEORGE=BARDEN TITLE I BASIC ALLOTMENTS, 1961-1962

	Smith-Hughes	George-Barden Title I
TOTALS	-0.12	-0.05
Alabama	-8.70	-4.47
Alaska	0	0
Arizona	25.26	2.07
Arkansas	-17.21	-6.93
California	18.74	4.41
Colorado	5.68	-0.66
Connecticut	6.71	6.71
Delaware	0	0
District of Columbia	-	0
Florida	46.77	16.21
Georgia	-1.69	-1.98
Hawaii	2.89	0
Idaho	2.40	1.40
Illinois	-4.31	-0.22
Indiana	3.69	3.55
Iowa	-7.11	-2.08
Kansas	-2.69	-2.08
Kentucky	-8.19	-3.53
Louisiana	2.38	0.05
Maine	-1.81	2.54
Maryland	11.87	6.30
Massachusetts	-8.02	2.27
Michigan	4.15	3.67
Minnesota	-2.34	-1.41
Mississippi	-10.57	-4.45
Missouri	-6.70	-1.77
Montana	0.86	0.54
Nebraska	-5.72	-2.88
Nevada	0	0
New Hampshire	4.87	0
New Jersey	1.65	2.25
New Mexico	9.51	-1.11
New York	-6.14	2.12
North Carolina	1.71	0.70
North Dakota	-5.12	-2.68
Ohio	3.33	3.00
Oklahoma	-3.02	-6.95
Oregon	-1.00	-1.48
Pennsylvania	-7.26	0.39
Rhode Island	-7.20	0
South Carolina	2.37	1.46
South Dakota	-2.43	-1.26
Tennessee	-5.42	-2.54
Texas	-0.27	-4.07
Utah	3.40	0
Vermont	0.28	0
Virginia	3.29	0.39
Washington	2.09	1.54
West Virginia	-14.81	-5.94
Wisconsin	-1.41	0.33
Wyoming	0	0
Puerto Rico	-	-0.41

SOURCE: Digest of Annual Reports.

Matching ratios (the ratio of state-local expenditures to federal expenditures) are an alternative method of expressing the relationship between state-local expenditures and federal expenditures. Table 2.4.5 shows matching ratios for all states in four post war years. Differences among states are evident; for example, Massachusetts had the largest ratio in 1948, 1954, 1959, and 1964. New Jersey had the second largest matching ratio in 1948, and the 27th largest ratio in 1964. Alabama had the 29th largest matching ratio in 1948 and the 5th largest in 1964. New Hampshire had one of the lowest ratios in both 1948 and 1964. Attempts to establish a statistical relationship between matching ratios in each state and per pupil expenditures for all elementary and secondary education were unsuccessful. A similar attempt to relate matching ratios to per pupil expenditures for vocational education was precluded by the lack of comparable enrollment data among states. Matching ratios are a measure of state and local support for vocational education and a reflection of accounting practices rather than an index of response to federal aid.

Expenditures by Program, 1964

The Smith-Hughes and George-Barden Acts authorize federal aid for specific programs of vocational education. Support of these programs with state-local funds is not uniform, either as among the various programs or as among states. The distribution of total expenditures in 1964 among the six programs is reported in Table 2.4.6 both for the entire U.S. and the four selected states. Agriculture and home economics programs accounted for over half of total expenditures in the U.S. This was also the case in Virginia and West Virginia but not in Maryland and Pennsylvania where relatively larger expenditures were made for technical education and trades and industry.

The relative importance of state governments and local governments in supporting each program is shown by the matching ratios listed in Table 2.4.7. Nationwide, localities had a matching ratio of 2.78 and the states had a 2.27 ratio in 1964. For every one of the six programs, the local matching was greater than state matching. In Maryland, the state matched to a greater extent than the local areas for every program except technical education. In Pennsylvania the local areas spent 3.8 times as much as the state for all vocational education. The states spent nearly five times as much as the local areas on health occupations. The same situation holds true in West Virginia where only health occupations had more state than local support. In Virginia the state spent 58 percent more than the local areas on total vocational education. Only for the technical education program did the local areas spend more

TABLE 2.4.5 - STATE-LOCAL MATCHING RATIOS FOR VOCATIONAL EDUCATION IN SELECTED YEARS

	1948	1954	1959	1964
U.S.	2.96	4.95	4.51	5.05
Alabama	2.10	3.26	4.04	8.09
Alaska			1.01	1.81
Arizona	2.04	4.44	5.33	5.49
Arkansas	2.67	4.94	3.54	4.83
California	5.06	6.54	5.64	6.70
Colorado	2.13	5.20	4.13	4.35
Connecticut	5.20	6.94	6.42	6.32
Delaware	1.29	2.98	3.54	4.23
District of Columbia	1.78	2.86	3.44	4.73
Florida	5.04	9.72	9.95	9.66
Georgia	2.67	6.47	5.01	5.76
Hawaii	2.63	4.35	4.18	4.56
Idaho	1.47	3.95	3.66	3.63
Illinois	2.72	5.55	4.36	4.02
Indiana	3.42	4.96	4.48	3.83
Iowa	1.65	3.63	3.32	2.46
Kansas	1.41	3.10	3.15	3.33
Kentucky	1.49	2.27	2.68	4.43
Louisiana	3.33	6.86	5.57	5.98
Maine	1.54	2.11	1.82	2.45
Maryland	3.40	3.46	3.36	3.53
Massachusetts	6.75	10.95	10.00	10.81
Michigan	2.58	4.37	4.26	3.59
Minnesota	2.33	5.00	4.74	4.84
Mississippi	2.30	3.85	3.46	3.86
Missouri	1.63	3.83	3.10	3.31
Montana	1.43	3.51	2.98	2.82
Nebraska	1.83	3.38	2.51	2.39
Nevada	1.00	1.37	2.04	4.53
New Hampshire	1.15	1.53	2.04	2.02
New Jersey	6.03	3.05	5.79	3.87
New Mexico	1.35	3.05	3.58	3.80
New York	4.34	4.40	3.83	6.30
North Carolina	2.39	4.83	4.05	5.36
North Dakota	1.60	2.63	3.03	2.93
Ohio	1.81	3.13	3.42	3.77
Oklahoma	2.62	8.12	6.33	7.20
Oregon	2.05	3.08	3.12	3.13
Pennsylvania	2.87	4.75	3.43	3.46
Rhode Island	1.13	1.93	1.99	3.10
South Carolina	2.85	5.31	4.56	4.91
South Dakota	1.48	2.63	2.57	2.32
Tennessee	2.16	4.37	3.51	3.98
Texas	3.55	9.26	9.05	9.21
Utah	3.72	4.87	5.38	6.09
Vermont	1.15	1.93	2.77	3.13
Virginia	3.74	5.34	4.92	5.95
Washington	5.70	3.18	6.88	8.13
West Virginia	2.15	3.10	2.52	3.72
Wisconsin	4.20	5.40	4.62	3.85
Wyoming	1.15	2.23	3.05	3.57
Guam			1.00	1.58
Puerto Rico			2.47	2.88
Virgin Islands			1.85	2.47

SOURCE: Digest of Annual Reports.

TABLE 2.4.6

VOCATIONAL EDUCATION EXPENDITURES, SMITH-HUGHES AND GEORGE-BARDEN ACTS, BY PROGRAM, FOR THE U.S. AND SELECTED STATES, 1964

(Expenditures in thousands of dollars)

	U.S.	Md.	Pa.	Va.	W. Va.
EXPENDITURES					
All Programs	332,785	3,113	12,325	9,794	2,734
Agriculture	77,474	486	2,172	2,156	676
Distributive Occupations	14,882	85	511	900	75
Health Occupations	12,457	20	593	318	90
Home Economics	89,872	429	2,253	3,514	831
Technical Education	34,907	395	1,471	733	163
Trades and Industry[1]	103,192	1,698	5,325	2,169	899
PERCENT					
Agriculture	23.3	15.6	17.6	22.0	24.7
Distributive Occupations	4.4	2.7	4.1	9.2	2.7
Health Occupations	3.8	0.6	4.8	3.3	3.3
Home Economics	27.0	13.8	18.3	35.9	30.4
Technical Education	10.4	12.7	11.9	7.5	6.0
Trades and Industry[1]	30.9	54.6	43.2	22.2	32.9

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[1] Includes fishery occupations

SOURCE: Vocational and Technical Education, 1964.

TABLE 2.4.7

MATCHING RATIOS OF STATE AND LOCAL EXPENDITURES TO FEDERAL EXPENDITURES UNDER THE SMITH-HUGHES AND GEORGE-BARDEN ACTS, FOR THE U.S. AND SELECTED STATES, 1964

	U.S.	Md.	Pa.	Va.	W. Va.
All Vocational Education Programs					
State and Local	5.05	3.53	3.46	5.95	3.72
State	2.27	2.51	0.72	3.64	0.78
Local	2.78	1.02	2.74	2.31	2.94
Agriculture					
State and Local	4.65	2.68	3.76	4.61	3.41
State	2.25	2.08	0.93	3.38	0.81
Local	2.40	0.60	2.83	1.23	2.60
Distributive Occupations					
State and Local	4.77	1.00	2.49	15.49	1.92
State	2.33	0.98	0.26	9.98	0.51
Local	2.44	0.02	2.23	5.51	1.41
Health Occupations					
State and Local	1.62	1.00	1.25	1.45	1.04
State	0.72	0.61	1.03	1.04	0.94
Local	0.90	0.39	0.22	0.40	0.10
Home Economics					
State and Local	9.13	2.37	3.32	12.41	3.89
State	4.15	1.81	0.81	7.58	0.50
Local	4.98	.56	2.51	4.83	3.39
Technical Education					
State and Local	1.57	1.05	1.19	1.12	1.00
State	0.62	0.02	0.07	0.33	0.12
Local	0.95	1.03	1.11	0.79	0.88
Trades and Industry					
State and Local	8.03	8.30	6.57	8.39	7.64
State	3.45	6.40	1.10	4.54	1.73
Local	4.58	1.90	5.47	3.85	5.91

SOURCE: Vocational and Technical Education, 1964.

than the state.

It is reasonable to expect that particular states are more interested in some of the Smith-Hughes and George-Barden programs than in others. This is reflected in varying amounts of state-local expenditure relative to federal aid for individual program areas. In recognition of the differing interests of states, a step toward greater flexibility became effective in 1957 which permitted, within each program, the release and reallotment among states of George-Barden funds. Thus it became possible for a state to release funds in one program area and ask for and receive reallotted funds in another. The net effects of the reallotment process are shown in Table 2.4.8.* There were eight states which on balance released funds in every year between 1957 and 1964. Eight other states always gained additional funds.

The response of states and localities to federal aid can best be studied when a major program is introduced. During the 1947-1964 period the most significant innovation in the federal government's vocational education program was the support of technical education. The response to that innovation is studied in the following section.

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*The figures for the U.S. indicate the extent to which some funds were released but not reallotted and hence reverted to the U.S. Treasury.

TABLE 2.4.8- RATIO OF FINAL FEDERAL ALLOTMENTS TO BASIC FEDERAL ALLOTMENTS FOR VOCATIONAL EDUCATION, 1957 TO 1964

	1957	1958	1959	1960	1961	1962	1963	1964
U.S.	.99	.98	.97	.99	1.00	1.00	1.00	1.00
Alabama	.99	1.01	.97	.92	.91	.83	.88	.92
Alaska	.52	.44	.60	.57	.61	.65	.60	.69
Arizona	1.00	1.05	1.00	1.01	1.04	1.02	1.00	1.05
Arkansas	1.00	.99	.98	.90	.86	.81	.89	.84
Calif.	.99	1.03	1.06	1.13	1.22	1.25	1.24	1.05
Colorado	1.00	1.01	1.02	1.05	1.10	1.17	1.18	1.06
Conn.	.96	.99	1.01	1.09	1.09	1.51	1.42	1.06
Delaware	.97	..99	.94	.99	1.03	1.06	1.01	1.01
D.C.	.72	.76	.85	.82	.83	.74	.58	.58
Florida	1.01	1.01	1.04	1.28	1.18	1.16	1.17	1.06
Georgia	1.01	1.02	1.07	1.05	1.02	1.02	1.07	1.00
Hawaii	.82	.97	.91	.97	.88	.92	.83	.82
Idaho	1.22	1.01	1.03	1.05	1.09	1.12	1.07	1.02
Illinois	.99	.98	1.00	.98	.91	.94	.95	1.05
Indiana	.96	.91	.94	.92	.93	.84	.85	1.00
Iowa	.99	.96	.96	.89	.86	.90	.98	1.06
Kansas	1.03	1.03	1.07	.93	.92	.86	.87	.88
Kentucky	.99	1.00	.93	.89	.93	.86	.85	1.00
La.	.96	.93	1.07	1.12	1.24	1.39	1.21	1.08
Maine	.95	.91	1.03	.99	.96	.78	.80	.84
Maryland	.97	.97	.96	.96	.97	1.04	.97	.99
Mass.	.98	.99	.97	.95	.98	1.00	.97	.99
Michigan	.98	.96	.97	1.02	1.08	1.04	1.04	1.03
Minn.	1.05	1.01	.99	1.06	1.03	.99	.96	.98
Miss.	1.02	1.02	1.08	1.01	.97	.98	1.02	.95
Missouri	.99	1.01	.94	.93	.91	.89	.91	1.00
Montana	1.02	1.01	1.01	1.00	1.01	1.00	.91	.86
Nebraska	.99	.96	1.00	1.11	1.02	1.01	.93	.95
Nevada	1.00	1.04	1.00	1.00	1.07	1.06	1.03	1.02
N.H.	.91	.97	.89	1.11	1.10	1.09	1.14	.97
N.J.	.99	.98	1.02	.99	1.08	1.05	1.11	1.06
N.M.	1.04	1.11	.99	1.06	1.05	1.01	1.18	1.05
New York	1.00	1.01	1.05	1.03	1.07	1.01	1.14	1.06
N.C.	.97	.97	.98	1.09	1.09	1.25	1.05	1.05
N.D.	.99	.96	.92	1.01	1.01	.96	.97	1.01
Ohio	.99	.95	.93	.89	.91	.89	.90	1.01
Okla.	1.02	1.07	1.05	1.14	1.08	1.20	1.20	1.06
Oregon	.99	1.01	1.01	1.03	1.00	1.03	1.03	1.03
Pa.	.99	1.01	1.00	.97	1.00	.97	1.00	1.04
R.I.	.92	1.05	.86	.95	.90	.74	.76	.79
S.C.	.97	.92	.89	.83	.84	.96	1.14	1.02
S.D.	.99	.99	.95	.86	.89	.78	.77	.94
Tenn.	.97	.99	.93	.97	.98	.96	.91	1.00
Texas	.97	.95	.90	.94	1.00	.96	.91	1.05
Utah	.99	1.00	1.03	1.06	1.03	1.00	1.07	1.06
Vermont	.94	1.00	1.00	1.01	1.01	.95	1.00	1.00
Va.	.99	.97	.93	.96	.93	.89	.91	.96
Wash.	1.06	1.06	1.03	1.03	1.12	1.28	1.36	1.05
W. Va.	.98	.97	.92	.92	.89	.79	.86	.86
Wis.	1.01	1.01	1.05	1.04	1.04	1.02	1.08	1.07
Wyoming	1.01	1.01	.95	1.03	.86	1.00	.82	.74
Guam	-	.03	.45	.81	.77	.64	.60	.60
P.R.	.82	.83	.77	.73	.84	.77	.67	.68
V.I.	.89	.88	.78	.82	.81	1.00	.82	1.00

SOURCE: Digest of Annual Reports.

2.5 Technical Education -- Title III of the George-Barden Act

In 1958 Congress passed the National Defense Education Act in response to the national need for training more persons in scientific and technical fields. Title VIII of NDEA, which became Title III of the George-Barden Act, authorized federal grants to states to be used for the training of skilled technicians in programs which do not lead to a baccalaureate degree. In fiscal 1959, the first year of federal funding, $3.75 million was allotted to the states. By 1963 the annual federal appropriation had increased to the level of $15 million. In that same year Title III was made a permanent part of the George-Barden Act and its authorization was fixed at $15 million annually. In 1964 the appropriation for technical education was 26.4 percent of total federal appropriations for vocational education. Within six years of its inception technical education had become the vocational program most heavily supported with federal funds even though three other vocational education programs (agriculture, home economics, and trades and industry) had been federally supported since 1918.

The newness of Title III and its large size relative to total vocational education in 1964 makes the study of state response to Title III funds important as an indicator of the possible and probable type of differential state response to the even larger funds available under the 1963 Vocational Education Act. Much can be learned about the efficiency and flexibility of state offices of vocational education by studying their reactions to the opportunities and challenges offered by the technical education program. The states had to resolve administrative, financial, and other problems when the technical education program was begun in 1959. These same difficulties were associated with the 1963 Act funds when first appropriated in 1965.

Although collectively the technical education expenditures by the federal, state, and local governments in 1964 were about one-tenth of the total expenditure on vocational education, individually the three levels of government devoted quite different proportions of their respective vocational education expenditure to technical education. Federal expenditures for technical education were 24.7 percent of the total federal expenditures for vocational education. For states the figure was 6.8 percent and for local governments, 8.4 percent. This could either be interpreted as an indication that Congress values technical education relatively more than state and local legislative bodies, or that states and localities have not had time to respond to the federal stimulus for this relatively new vocational education program.

The state-local matching ratio gives some indication of the stimulatory effect of federal expenditures. The federal allotments and expenditures increased each year from 1959 to 1963 and therefore state-local matching expenditures would have had to increase at the same rate to maintain a constant matching ratio. During 1960, 1961, and 1962 state-local technical education expenditures did not grow as fast as federal expenditures, but in 1963 they grew more rapidly. In 1964 state-local technical education expenditures increased $2.2 million, even though the federal appropriation remained constant and the expenditure of federal funds only increased $0.4 million.

If state-local expenditures continue to grow with federal expenditures remaining constant, then the matching ratio will increase over time. This has typically been the case with other vocational education programs. The matching ratio for the total vocational education program has grown from 2.65 in 1918 to 5.05 in 1964. This growth in the matching ratio has been used by some observers as evidence that the federal program is achieving its purpose to stimulate state-local participation in and support of vocational education. But a nationwide matching ratio does not take into account differences among states. It is the purpose of this analysis of technical education to investigate the state-by-state response to the federal stimulus. Of particular importance is the extent to which the federal stimulus has induced state-local technical education expenditure where previously there was little or none.

To aid in the analysis, some indexes (in the form of ratios) of state response to federal technical education financial aid have been developed. They reflect three decisions which are made in the aggregate by all persons concerned with technical vocational education within each state. State and local officials must ask themselves:

> Is the federal basic allotment to our state too large, just right, or too small?
>
> Will we spend all of our final federal allotment?
>
> How many state-local dollars will we spend for every federal dollar we spend?

These complex, interrelated fiscal decisions whether made explicitly or implicitly are reflected in reallotment, expenditure, and matching ratios.

The Reallotment Ratio

A reallotment provision was incorporated into the George-Barden Act in 1956 when the practical nursing program (Title II) was made a part of that act. This provision allows a state to release a part or all of its federally allotted funds for a particular program to the Office of Education to be re-allotted to other states which ask for additional allotments for the same vocational education program. Any federal technical vocational education allotments which are not spent during the fiscal year for which they are allotted revert back to the U.S. Treasury, hence it is a financial loss to the total technical program when a state either fails to spend all of its federal allotment or fails to release that portion it will not spend to other states.*

In 1959, 15.6 percent of the basic federal allotment for technical education was released by 20 states and reallotted to 21 states which had requested additional funds. Several states released their entire basic allotment to the Office of Education to be used by other states. These states can be identified in Table 2.5.1 which shows the reallotment ratios for each year that technical education has been federally supported. The reallotment ratio is the ratio of final federal allotments to basic federal allotments. A value for the reallotment ratio of 1.00 means that the state did not release any federal funds or receive any released funds. A value less than 1.00 means that the state released some funds, and a value in excess of 1.00 means that the state received released funds.

The Expenditure Ratio

The difference between the federal allotment for vocational education and federal expenditures on vocational education is explained by the failure of some states to spend all of their final federal allotment. The expenditure ratio for a state is the ratio of that state's expenditure of federal funds to that state's final allotment of federal funds. A state's basic allotment is not used as

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*Under the provisions of the Vocational Education Act of 1963 Smith-Hughes and George-Barden Funds may be transferred (with the approval of the Office of Education) to other programs or purposes within a state.

TABLE 2.5.1 REALLOTMENT RATIOS FOR TECHNICAL EDUCATION, 1959-1964
(The ratios of final federal allotment to basic federal allotment)

	1959	1960	1961	1962	1963	1964
TOTAL U.S.	1.00	1.00	1.00	.99	1.00	1.00
Alabama	1.00	.59	.60	.37	.58	.69
Alaska	.00*	.16	.13	.20	.35	.67
Arizona	1.01	1.08	1.15	1.05	1.00	1.18
Arkansas	1.00	.41	.34	.24	.59	.38
California	1.46	1.59	1.64	2.05	1.89	1.19
Colorado	1.00	1.28	1.34	1.62	1.60	1.19
Connecticut	1.46	1.90	1.64	3.18	2.67	1.19
Delaware	1.00	1.00	1.24	1.17	1.01	1.00
Dist.of Columbia	.62	1.00	.78	.58	.17	.18
Florida	1.37	2.81	1.64	1.67	1.61	1.19
Georgia	1.40	1.28	1.06	1.13	1.26	1.00
Hawaii	.50	1.00	.51	.71	.35	.32
Idaho	1.39	1.37	1.45	1.36	1.20	1.00
Illinois	1.34	1.00	.60	.72	.77	1.13
Indiana	1.21	1.00	1.00	.45	.54	1.00
Iowa	1.00	.50	.47	.70	1.00	1.19
Kansas	1.00	.51	.62	.46	.64	.66
Kentucky	.70	.47	.74	.43	.44	1.00
Louisiana	1.46	1.28	1.64	2.36	1.63	1.19
Maine	1.46	1.00	1.00	.18	.23	.44
Maryland	1.42	1.18	1.24	1.42	1.08	1.00
Massachusetts	1.00	.80	1.00	1.00	.90	1.00
Michigan	1.33	1.47	1.53	1.10	1.09	1.09
Minnesota	1.15	1.35	1.13	.90	.83	.85
Mississippi	1.00	1.00	1.00	1.00	1.04	.89
Missouri	.50	.60	.50	.54	.64	1.00
Montana	1.00	1.00	1.00	1.00	.72	.56
Nebraska	1.35	1.86	1.18	1.07	.79	.86
Nevada	1.05	1.00	1.37	1.17	1.07	1.07
New Hampshire	.00*	1.63	1.36	1.43	1.58	1.00
New Jersey	1.13	1.00	1.15	1.17	1.38	1.19
New Mexico	.50	1.00	1.00	.90	1.67	1.19
New York	1.46	1.23	1.34	1.03	1.49	1.19
North Carolina	1.00	1.63	1.64	1.97	1.14	1.10
North Dakota	.50	1.00	1.00	.74	.84	1.00
Ohio	.50	.50	.62	.49	.56	1.00
Oklahoma	1.46	1.44	1.38	1.81	1.77	1.19
Oregon	1.00	1.14	1.00	1.08	1.07	1.07
Pennsylvania	1.00	.72	.89	.73	.93	1.11
Rhode Island	.00*	1.00	.78	.18	.29	.37
South Carolina	.50	.32	.38	1.00	1.63	1.19
South Dakota	.50	.08	.30	.11	.11	.76
Tennessee	.50	.87	.87	.84	.65	1.00
Texas	.50	.69	1.00	.84	.61	1.13
Utah	1.38	1.28	1.15	1.00	1.21	1.19
Vermont	1.00	1.06	1.00	.72	1.00	1.00
Virginia	.75	1.00	.76	.58	.70	.89
Washington	1.31	1.25	1.64	2.14	2.33	1.19
West Virginia	.50	.65	.50	.23	.51	.55
Wisconsin	1.46	1.28	1.22	1.06	1.24	1.19
Wyoming	.50	.84	.25	1.00	.45	.22
Guam	.00*	.00*	.00*	.00*	.00*	.00*
Puerto Rico	.50	.32	.57	.38	.27	.34
Virgin Islands	.00*	.00*	.00*	.00*	.43	1.00

* Total Basic Allotment Released
SOURCE: Digest of Annual Reports.

the denominator because it is based on population variables. A state does, however, have some control over final allotments as it can release all or part of its basic allotment to the Office of Education. It has only partial control in increasing its final allotment since the amount added is dependent on how much money other states release and how many other states are competing for this released money.

Federal expenditures should be compared with final federal allotment in a state because even a state which did not request additional funds implicitly indicated that all of its final allotment could be spent since it did not release funds. Therefore, the expenditure ratios in Table 2.5.2 measure the extent to which states spend the federal money that they claim they will be able to spend. The maximum ratio of 1.00 is assigned to those states which do spend all of their final federal allotment. Lower expenditure ratios indicate the failure to use federal final allotments, i.e., a return of some money from the vocational education program to the U.S. Treasury.

The Matching Ratio

That portion of the federal funds allotted to the states for technical education which is spent must be matched at least dollar for dollar by state-local expenditures. The ability of a state to match federal funds in the first few years of a new program will depend on the state's previous experience with that program or with similar programs, the extent of the need for that program in the state, and institutional factors peculiar to the state, such as the legislative and financial processes necessary to establish new educational programs. States which had no technical vocational education program prior to 1959 had to undergo a tooling-up period to establish the necessary plant and equipment for the relatively expensive technical programs. (Title III funds cannot be used for construction.) Since this could have required several years, such a state might not have used all or any of its federal allotment during the first few years of the new program.

The matching ratio measures the extent to which state-local expenditures exceed federal expenditures. It is the ratio of state-local expenditures to federal expenditures. The ratio must have a value of at least one because of the matching requirement. Table 2.5.3 lists the matching ratios for each state by year.

Six Year Trends

Some trends can be detected in state response to the

TABLE 2.5.2 EXPENDITURE RATIOS FOR TECHNICAL EDUCATION,1959-196
(The ratio of expenditure of federal funds to final federal allotment)

	1959	1960	1961	1962	1963	1964
TOTAL U.S.	.73	.85	.83	.87	.90	.91
Alabama	.41	.88	.89	.77	1.00	.66
Alaska	--*	.11	.52	.43	..00**	.16
Arizona	.98	1.00	.99	.95	.99	.99
Arkansas	.00**	.76	.80	.86	.38	1.00
California	1.00	1.00	1.00	1.00	1.00	1.00
Colorado	.99	1.00	.89	.93	1.00	.99
Connecticut	1.00	1.00	1.00	1.00	1.00	1.00
Delaware	1.00	.68	1.00	.85	.49	1.00
Dist.of Columbia	.15	1.00	.99	.93	.98	.85
Florida	1.00	1.00	1.00	1.00	.98	1.00
Georgia	1.00	1.00	1.00	1.00	1.00	1.00
Hawaii	1.00	1.00	1.00	.45	.94	.86
Idaho	1.00	1.00	1.00	1.00	.96	1.00
Illinois	.63	.40	.79	.62	.63	.96
Indiana	.15	.27	.33	.23	.81	.65
Iowa	.08	.71	1.00	.91	1.00	1.00
Kansas	.48	.73	.56	.98	.88	.92
Kentucky	.73	.50	.91	.83	.49	.25
Louisiana	.97	1.00	1.00	.96	.82	1.00
Maine	.85	1.00	.21	.62	.68	.62
Maryland	.91	1.00	.84	.60	.96	.97
Massachusetts	1.00	1.00	.99	.78	.99	1.00
Michigan	.76	1.00	1.00	.86	.86	1.00
Minnesota	1.00	.90	1.00	.91	.90	1.00
Mississippi	.04	.43	.42	.38	.46	.71
Missouri	.23	.34	.90	.67	.83	.70
Montana	.52	.37	.52	.29	.42	.78
Nebraska	1.00	.99	.95	.92	.91	.89
Nevada	.97	1.00	1.00	1.00	1.00	1.00
New Hampshire	-- *	.95	.98	1.00	.95	.99
New Jersey	.38	1.00	1.00	1.00	1.00	1.00
New Mexico	.13	.71	.83	.87	.80	1.00
New York	1.00	1.00	1.00	1.00	1.00	1.00
North Carolina	.96	1.00	.99	.95	.89	1.00
North Dakota	1.00	1.00	.89	.93	.97	1.00
Ohio	.04	.80	1.00	1.00	1.00	1.00
Oklahoma	1.00	.97	1.00	1.00	.92	1.00
Oregon	.99	1.00	1.00	1.00	.94	1.00
Pennsylvania	.83	.74	.84	.78	.90	.86
Rhode Island	--*	.00**	.08	.48	.22	.62
South Carolina	.13	1.00	.83	1.00	1.00	1.00
South Dakota	.00**	.00**	.00**	.00**	.18	.30
Tennessee	.97	.80	.84	.70	.90	.79
Texas	.30	.56	.41	.49	.59	.76
Utah	1.00	1.00	1.00	1.00	1.00	1.00
Vermont	.55	1.00	1.00	1.00	.97	1.00
Virginia	.99	1.00	.89	.98	1.00	1.00
Washington	1.00	1.00	1.00	1.00	1.00	1.00
West Virginia	.00**	.43	.49	.99	.80	.82
Wisconsin	.91	1.00	1.00	.98	.95	1.00
Wyoming	.66	.14	.25	.12	.24	.68
Guam	--*	--*	--*	--*	--*	--*
Puerto Rico	.84	.89	.87	.93	.96	.94
Virgin Islands	--*	--*	--*	--*	.00**	.57

*No Final Allotment **No Federal Expenditure, But Positive Final Allotment.

SOURCE: Digest of Annual Report.

TABLE 2.5.3 MATCHING RATIOS FOR TECHNICAL EDUCATION,1959-1964
(The ratios of expenditures of state-local funds to expenditures of federal funds)

	1959	1960	1961	1962	1963	1964
TOTAL U.S.	1.48	1.35	1.32	1.22	1.42	1.57
Alabama	1.03	1.14	1.00	1.28	1.00	1.12
Alaska	--*	1.00	1.00	1.00	--*	1.00
Arizona	1.00	1.13	1.00	1.00	1.00	1.00
Arkansas	--*	1.11	1.49	1.02	1.02	1.00
California	1.71	2.78	2.64	1.69	2.31	3.80
Colorado	1.06	1.25	1.45	1.39	1.41	1.35
Connecticut	6.48	3.38	3.60	1.38	1.74	4.55
Delaware	2.98	1.00	1.22	1.01	1.44	.95
Dist.of Columbia	1.12	1.02	1.00	1.00	1.01	1.00
Florida	1.43	1.05	1.64	1.84	1.80	2.44
Georgia	1.00	1.02	1.14	1.08	1.17	1.20
Hawaii	1.25	1.04	1.15	1.00	1.00	1.01
Idaho	1.20	1.05	1.19	1.04	1.00	1.01
Illinois	1.00	1.00	1.00	1.00	1.00	1.00
Indiana	1.00	1.00	1.02	1.41	1.01	1.10
Iowa	1.38	1.00	1.00	1.00	1.78	1.00
Kansas	1.02	1.18	1.06	1.06	1.07	1.08
Kentucky	1.00	1.02	1.01	1.00	1.05	1.08
Louisiana	1.17	1.30	1.03	1.11	1.00	1.23
Maine	1.00	1.44	1.21	1.47	1.68	1.52
Maryland	1.00	1.00	1.00	1.00	1.00	1.05
Massachusetts	1.87	2.32	1.54	1.73	1.81	1.62
Michigan	1.00	1.09	1.06	1.03	1.00	1.02
Minnesota	1.00	1.00	1.00	1.00	1.02	1.05
Mississippi	1.00	1.01	1.00	1.00	1.03	1.00
Missouri	1.00	1.10	1.01	1.00	1.00	1.00
Montana	1.00	1.01	1.17	1.16	1.03	1.02
Nebraska	1.06	1.00	1.00	1.00	1.00	1.00
Nevada	1.00	1.29	1.16	1.14	1.21	1.25
New Hampshire	--*	1.30	1.32	1.11	1.12	1.30
New Jersey	1.00	2.10	2.04	1.62	1.47	2.32
New Mexico	1.08	1.17	1.12	1.08	1.04	1.05
New York	2.92	1.03	1.01	1.20	1.64	2.13
North Carolina	1.00	1.02	1.06	1.02	1.09	1.41
North Dakota	3.30	1.13	1.00	2.42	1.00	1.08
Ohio	1.00	1.18	1.06	1.10	1.09	1.00
Oklahoma	1.00	1.60	1.68	1.37	1.55	1.69
Oregon	1.23	1.11	1.56	1.23	1.21	1.06
Pennsylvania	1.30	1.21	1.13	1.22	1.04	1.19
Rhode Island	--*	--*	1.48	2.15	2.47	1.08
South Carolina	1.00	1.00	1.00	1.00	2.17	1.82
South Dakota	--*	--*	--*	--*	1.00	1.00
Tennessee	1.01	1.00	1.00	1.01	1.01	1.00
Texas	1.23	1.05	1.00	1.00	1.00	1.00
Utah	1.31	1.97	2.18	2.20	1.98	2.30
Vermont	1.03	1.49	1.14	1.15	1.00	1.41
Virginia	1.05	1.08	1.20	1.00	1.08	1.12
Washington	1.16	2.05	1.48	1.00	1.71	3.99
West Virginia	--*	1.22	1.00	1.00	1.00	1.00
Wisconsin	1.00	1.00	1.00	1.00	1.02	1.34
Wyoming	1.01	1.00	1.11	1.00	1.00	1.00
Guam	--*	--*	--*	--*	--*	--*
Puerto Rico	1.00	1.05	1.00	1.00	1.00	1.00
Virgin Islands	--*	--*	--*	--*	--*	1.25

*No Federal Expenditures

SOURCE: Digest of Annual Report.

technical education stimulus provided by the federal government. Table 2.5.4 gives the number of states for each year which had reallotment, expenditure, and matching ratios of specific magnitudes. A reallotment ratio of one or greater

TABLE 2.5.4

THE NUMBER OF STATES WHICH HAD REALLOTMENT,
EXPENDITURE, AND MATCHING RATIOS
FOR TECHNICAL EDUCATION OF SPECIFIC MAGNITUDES,
1959-1964

Ratio Values		1959	1960	1961	1962	1963	1964
Reallotment ratio	⩾ 1.00	34	35	32	28	26	36
Expenditure ratio	⩾ .95	23	29	27	23	25	32
Matching ratio	⩾ 1.45	7	8	12	8	13	11

SOURCE: Tables 2.5.1-3.

means that the state received either zero or a positive amount of additional federal funds through the reallotment process, i.e., it did not release funds. The trend in these ratios indicates that more states released federal funds each year during the period when federal allotments were growing (from 1959 to 1963), but as soon as federal allotments leveled off in 1964, the number of states releasing federal funds dropped from 28 to 18. That is, some states had programs that had grown fast enough to allow them to use all of their basic allotments. The expenditure ratio of .95 or more means that at least 95 percent of the final federal allotment was spent. There was no general tendency over the 1959-63 period for the number of states spending at least 95 percent of their final federal allotment to increase. But in 1964 when federal allotments leveled off, there was a sharp increase in the number of states spending at least 95 percent of their final allotment. A matching ratio of 1.45 or more means that state-local expenditures were at least 45 percent greater than federal expenditures in the state. In 1959 only seven states had 45 percent more state-local expenditure than federal expenditure. In 1964 eleven states had reached this overmatching level.

A further examination of Tables 2.5.1-3 indicates that the number of states receiving reallotments remained fairly constant, ranging in number from 19 to 22. The number of states that neither released nor received released funds varied from 14 to 5. Ten states received reallotments in each of the six years. Connecticut was the leading state in gaining federal funds through reallotments. In each year Connecticut ranked either first or second in terms of reallotment ratios; in 1962 Connecticut increased its basic allotment by 218 percent. California was also a successful state in gaining reallotments. In 1962 it increased its basic allotment by 105 percent. Louisiana, likewise, had big reallotments every year. Colorado, Florida, Michigan, New York, Oklahoma, Washington, and Wisconsin also had positive reallotments in each of the six years. On the other hand, Alaska, Puerto Rico, and West Virginia did not keep as much as 70 percent of their basic allotment in any of the six years.

A noticeable change occurs in the number of states spending 50 percent or less of their federal money. Over the six years this number has declined from 20 to four. Of these 20 states which in 1959 spent less than 50 percent of their final federal allotment, in 1964 three of them spent 100 percent, 5 spent between 90 and 100 percent, 9 spent between 50 and 90 percent, and three still spent less than 50 percent. California, Connecticut, New York, Utah and Washington spent 100 percent of their final federal allotment in each of the six years. Four other states had reallotment ratios $>$ .95 in each of the years. Alaska and South Dakota never spent as much as 52 percent of their final federal allotment in any of the six years. There has been a reduction from eight to one in the number of states having no federal expenditures for technical education.

The change in state matching ratios between 1963 and 1964 was for some states the result of decreasing federal reallotments. California, Connecticut, Florida, and New Jersey had big increases in their matching ratios between 1963 and 1964. Yet, Connecticut had a decrease in the absolute number of state and local dollars spent. California and Florida had only slight increases in state and local expenditures. Delaware's matching ratio fell from 1.44 to 1.00 in 1964 even though Delaware spent $16,000 more in state and local funds in 1964 than in 1963. Federal final allotments to Delaware were about the same in both years. The decline in Delaware's matching ratio is solely the result of Delaware's increasing its expenditure ratio from .49 to 1.00. Therefore, the matching ratio for a given year is in many cases dependent on the reallotment and expenditure ratios and hence is not by itself a good index for judging a state's program.

One condition for the effective operation of a vocational education program in a state is that all final federally allotted funds be used when state-local matching funds are available. That is, a state's self-interest dictates that it use all of its federal funds on federally reimbursable items so that state and local funds can be spent on vocational education items that are not reimbursable with federal funds or on other state-local needs. States could, every year they have matching ratios greater than one, arrange to reimburse state-local expenditures with federal funds in such a way that all the federal funds are used. Several states which overmatched ignored this effectiveness condition by releasing part of their basic allotment and/or neglecting to spend all of their final federal allotment. Twenty-one times during the six year period there have been states which had at least 25 percent overmatching and also had reallotment ratios of less than 1.00 or federal expenditure ratios of less than 1.00. Maine, Massachusetts, and Rhode Island each appear on the list three times. Maine and Rhode Island both released money and failed to spend federal money and yet continued to overmatch.

Another condition for the effective operation of the national technical education program is that the federal funds released by some states be used by the states which receive them. A state that receives federal money through the reallotment process and then fails to spend it is depriving the total technical program of this money as the unspent federal money reverts to the U.S. Treasury. There were 15 times between 1959 and 1964 when states which received additional federal funds through the reallotment process failed to spend as much as 90 percent of their final allotment. For example, Illinois received a reallotment of $52,607 in 1959 but spent none of it; in fact, $24,793 of its $155,820 basic allotment was not spent. In 1964, Texas received $92,993 of the federal funds released by other states; Texas spent none of these reallotted funds. In addition, Texas did not spend another $98,585 of its basic allotment.

For the technical education program as a whole, money that could have been used by some states was returned each year to the U.S. Treasury. Over $7.6 million was returned to the U.S. Treasury during the first six years of federal support for technical education; this amounted to over 12 percent of the total federal funds alloted. Better use of administrative discretion at the federal level would have encouraged states to release unused funds to other states or encouraged those states to develop programs on which federal funds could be spent.

Evaluation of State Response

The three ratios described in the previous section can be used to evaluate the response of the states to the George-Barden technical education program begun in 1959. No one of the ratios taken alone has any evaluative significance. A reallotment ratio greater than one indicates a strong state program only if the additional federal funds received through the reallotment process were actually spent, that is if the expenditure ratio were at or near one. The expenditure ratio by itself is not of any particular significance either as that ratio may be at or near one even though a state released a large portion of its basic allotment. The matching ratio, most commonly used to assess federal programs of vocational and technical education, cannot be used alone to indicate the relative success of the George-Barden Title III program. A state may spend only a portion of its final federal allotment and still have a relatively high matching ratio. The national matching ratio for technical education ranged between 1.22 and 1.57 over the six year period. A few states, by spending a relatively large amount of state-local funds, pulled the national ratios up. The number of states which had matching ratios above the national average varied from six to thirteen over the 1959-1964 period though in some instances these same states did not spend as much as 95 percent of their final federal allotments.

A few states had established technical education programs in 1959 and were thus able to respond immediately to the federal program. These states had reallotment ratios of one or more, and had expenditure ratios at or near one, throughout the six year period. The states having these characteristics were California, Connecticut, Florida, Idaho, Nevada, New York, Utah, and Washington. By 1964 twenty-one additional states had these characteristics. These states represent clear examples of the stimulative effects of the Title III program. Readers interested in a particular state are invited to study closely the reallotment, expenditure, and matching ratios presented in Tables 2.5.1 to 2.5.3.

Expenditures by Function

There are eight functional expenditure categories by which a state's total for technical education expenditures were classified for 1964: instruction, equipment, supervision, administration, teacher education, research, vocational guidance, and all other allowable items. For the nation as a whole, 56% of total expenditures went for instruction and 30% for equipment. There are major differences from state to state in the distribution of expenditures among the eight functions. Those states which were in the process of developing their technical programs generally spent relatively more for equipment than those states having established programs or those lacking programs.

There were some marked differences between functional expenditures for technical education and expenditures for other vocational education programs. One-third of the expenditures for technical education was for instructional equipment, while only one-half of one percent of non-technical education expenditures was for instructional equipment. Part of this big difference is the result of limitations placed on the expenditure of non-technical education funds. Administration expenditures, research expenditures, and expenditures on "other allowable items" were also relatively more important for technical education programs than for all other vocational education programs.

Conclusions

This analysis of the six year state-by-state expenditures on federally reimbursed technical education programs reveals that the federal aid has had great stimulative effect on program expenditures in some states, has supported and advanced already existing program expenditure in some other states and has had little or no effect on program expenditure in still other states. One would not expect the same importance to be given to technical education by all states because relative demands for skilled technicians varies from state to state. Title III of the George-Barden Act did include a recognition of this variability by including provision for the release and reallotment of funds. As indicated above, though, this was an imperfect solution to the problem; several million dollars were lost to the technical education program, a loss which might well have been minimized by closer federal administration of the reallotment process. By allotting the federal appropriation for technical education among the states on the basis of population variables some states received funds which could have been used more effectively in other states. The Vocational Education Act of 1963 provided an alternative method for dealing with this problem. Under its provisions funds can be transferred by a state from a particular program area like technical education to another or to the 1963 Act itself where federal funds must be matched on the basis of categories of broad purpose rather than by program area. States which, over the 1959-1964 period, did not take full advantage of their allotment of federal funds for technical education can be expected to take advantage of the transfer provision of the 1963 Act. This expectation will be tested in the following chapter.

CHAPTER 3

THE VOCATIONAL EDUCATION ACT OF 1963

3.1 Background and Basic Concepts

The Smith-Hughes and George-Barden Acts, which structured American vocational education for nearly fifty years, authorized specific amounts of federal aid for particular occupational areas. By the beginning of the 1960's the rigidity of the federal government's program had come to be sharply contrasted with the implications of a rapidly changing economy. In recognition of this, President Kennedy, in his first message to Congress on the problems of American education, requested that the Secretary of HEW appoint a panel of consultants to look into alternative approaches to the fulfillment of vocational education needs. In late 1962 the panel of consultants submitted its report.* The panel recommended that federal funds be appropriated for training groups of people needing vocational education rather than for specific occupational categories. This recommendation was subsequently accepted by Congress in 1963.**

The Vocational Education Act of 1963 designated six purposes for which federal funds could be used, on a matching basis, by states. These matching purposes were: vocational education at the 1) secondary and 2) post-secondary levels, vocational education 3) for adults and 4) for persons with special needs, 5) construction of area vocational schools, and 6) ancillary services. In addition, funds for research were authorized. (See Appendix B. Provision was also made in the act for federal support of work-study programs and residential vocational school construction. These two sections of the act have not been analyzed in this report.) The concept of matching purposes is in contrast to the concept of program area as used in the Smith-Hughes and George-Barden Acts. For example, training for office occupations at the secondary, post-secondary, or adult levels can be supported with 1963 Act funds, whereas such training was never eligible for Smith-Hughes or George-Barden support.

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*Education for a Changing World of Work, op. cit.

**For the legislative history see Douglas E. Kliever, Vocational Education Act of 1963: A Case Study in Legislation, American Vocational Association (Washington, D.C.: 1965).

Funds appropriated for the purposes outlined in the 1963 Act are allotted among the states on the basis of annual population and income estimates. The allotment formula contained in the 1963 Act is analyzed in detail in Section 3.3. Neither annual population data nor the income variable are used to allot Smith-Hughes and George-Barden funds. These two acts were not repealed by the 1963 legislation, but some fiscal flexibility was introduced by a provision permitting states, with the approval of the U.S. Office of Education, to transfer allotments received under any of the three acts to any of the other acts.

Although the Vocational Education Act authorized $60.0 million for fiscal 1964, no funds were appropriated. The full authorizations of $118.5 million for 1965 and $177.5 million for 1966 were appropriated. For fiscal 1967 the authorization of ten percent of the total appropriation for research was not fully funded as Congress appropriated $10.0 million for research and $198.2 million for allotment to the states. The total amount was less than the $225.0 million authorized for fiscal 1967; for every year thereafter, the total authorization remains at $225.0 million. The response of the states to the initial allotment of 1963 Act funds is studied in detail in Section 3.4. A description of the intergovernmental fiscal relations associated with the Vocational Education Act of 1963 is presented in the following section.

3.2 Intergovernmental Fiscal Relations: An Overview

Appendix Figure II graphically summarizes the intergovernmental fiscal relations associated with Section 4 of the Vocational Education Act of 1963. Data for fiscal 1965 has been used for illustrative purposes, as this was the first year of funding and the only year for which data is available. Figure II is arranged in the same basic format as Figure I which is explained in section 2.2. The upper portion of the figure is divided horizontally into legislative and budgetary processes and allotment and expenditure processes. The lower portion shows the final uses of federal, state, and local funds associated with the 1963 Act.

In fiscal 1965 expenditures for vocational education were also made under the terms of the Smith-Hughes and George-Barden Acts, $53,827,433 of federal funds, $108,217,703 of state funds, and $142,666,452 of local funds. These expenditures could have been shown in much the same way as the 1964 data was presented in Figure I. Vertically the figure is divided into federal, state, and local sections. The influences exerted by BoB and HEW-OE are of the same type as before. The permanent authorization and the annual appropriation for Section 4 of the 1963 Act differ from that for the Smith-Hughes and George-Barden Acts in that federal funds are not tied to program areas. As was explained in the previous section, expenditures associated with the 1963 Act are classified by broad educational purposes. Ten percent of the authorization and appropriation is set aside for federally administered research (such as this study). The remainder of the federal funds is allotted to the states on the basis of state shares of the population in three age groups and state per capita personal income. This allotment process, a major aspect of intergovernmental fiscal relations, is analyzed in section 3.3.

For a state to use any of its basic federal allotment of 1963 Act funds, it had to submit a new state plan and have it approved by OE. For this reason, 53 states had new state plans approved in 1965. The 1963 Act contains a reallotment provision and as a result of this the reallotment of released funds redistributes some of the basic allotment among states so that basic and final allotments differ. A provision of the 1963 V.E. Act allows states, upon approval by OE, to transfer funds allotted to a state under one vocational education act to other acts. A box appears in Figure II in the OE column which shows the transfer from the Smith-Hughes and George-Barden Acts to the 1963 Act. (No 1963 Act funds were transfered to the

Smith-Hughes or George-Barden Acts.) As a result of this transfer provision total federal funds available to states may be larger than the appropriation for the 1963 Act. The first year effects of the transfer provision are discussed in section 3.4.

The same processes occur at the local level as explained in Figure I. Two types of expenditures which were unknown and non-reimbursable in the framework of Figure I are now included, in part at least, in the data listed in Figure II. State-local expenditures on construction of area vocational schools and on office occupations education are reimbursable with federal funds under the 1963 Act.

3.3 The Allotment Provision

The Vocational Education Act of 1963, like many other federal grant-in-aid programs, contains an allotment provision by which the fixed annual appropriation is divided among the states. There are two basic components of the allotment process, a measure of the need for the program in each state and an adjustment in state allotments in accordance with relative state fiscal capacities, though not all grant-in-aid programs contain such equalization provisions. Section 4 of the 1963 Act calls for population in various age groups to be used as a measure of program need, weighted by allotment ratios which, as a measure of fiscal capacity, express per capita personal income in a state relative to per capita personal income (PCPI) in the nation. (Allotment ratios will be explained more fully below.) Fifty percent of the total appropriation for Section 4 of the Act is distributed on the basis of 15-19 year olds, 20 percent on the basis of 20-24 year olds, 15 percent on the basis of 25-65 year olds and 5 percent on the basis of 15-65 years olds, similarly weighted. The remaining 10 percent is reserved to be used for research by the U.S. Office of Education.*

Inherent in the process by which federal appropriations are allotted under the 1963 Act is the dependence of the allotment received by any one state on the population and income variables in not only that state but in every other state as well. If the federal appropriation is thought of as a pie to be divided among the states, the share of the pie received by any one state is affected by changes in population and income in every other state. Hence to analyze the allotment provisions of the Act a computer program was written which simulates

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*The share, expressed as a percent of the federal appropriation, (S_i) received by the i th state with the allotment formula in the Vocation Education Act of 1963 can be expressed as follows:

$$S_i = A_i \quad .5294 \frac{P_{1_i}}{\sum_{i=1}^{55} (A_i P_{1_i})} + .2188 \frac{P_{2_i}}{\sum_{i=1}^{55} (A_i P_{2_i})} + .1588 \frac{P_{3_i}}{\sum_{i=1}^{55} (A_i P_{3_i})}$$

$$A_i = .4 \leqslant (1 - .5R_i) \leqslant .6$$

Where R_i is the ratio of PCPI in the i th state to national PCPI; P_1, P_2, and P_3 are the age groups 15-19 year olds, 20-24 year olds, and 25-65 year olds respectively. The number of states is 55 as the District of Columbia and the four outlying areas, American Samoa, Guam, Puerto Rico, and the Virgin Islands are included.

the allotment process and made it possible to investigate the effects of hypothetical changes and to make projections. In the following parts of this section the allotment provision of the Vocational Education Act of 1963 will be analyzed using the basic concept of state shares of the federal appropriation.

Measures of Program Need

Part of the rationale of the Vocational Education Act of 1963 was to make vocational education accessible to all persons. As an Office of Education pamphlet puts it,

> The act is comprehensive: it shuts out no group, no occupation, except those generally considered professional or as requiring a baccalaureate or higher degree. It is concerned about workers of all ages at all levels for all fields; about persons in sparsely settled areas as well as the urban; about delinquent young people as well as the most industrious; about the employed as well as the unemployed and the underemployed.*

This broad concern is reflected in the allotment provisions of the Act by the use of population in three age groups - 15-19 year olds, 20-24 year olds, and 25-65 year olds- as the basic measure of the need for federal funds. By assigning heavier weights to the two younger age groups than for the 25-65 year olds the Act implicitly recognises that it is relatively more important or necessary to provide this type of educational opportunity for younger people.

The use of these three age groups, and their respective weights, yields state shares that are significantly different from state shares using total population. As shown by comparing columns (1) and (2) in Table 3.3.1, states with relatively larger percents of their total population in the heavily weighted 15-19 age group receive larger shares of the federal appropriation. Most of the southern states have their shares increased when the weighted age groups are used, reflecting the fact that past migration has reduced the relative number of persons over the age of twenty. For every $100 in federal appropriations, South Carolina receives $1.16 if total population were used as the criterion for distribution and $1.37 when weighted age groups are used. Given the size of the federal appropriation in 1966, South Carolina received

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*The Vocational Education Act of 1963, U.S. Department of Health, Education, and Welfare; Office of Education, OE-80034, 1965, p. 7.

TABLE 3.3.1

COMPARISON OF STATE SHARES BASED ON TOTAL POPULATION, POPULATION IN THREE AGE GROUPS AS WEIGHTED IN THE VOCATIONAL EDUCATION ACT OF 1963, AND THE ACTUAL ALLOTMENT FORMULA[a]

(State shares expressed as a percent of the federal appropriation for fiscal 1966)

	(1) Shares Based on Total 1965 Population	(2) Shares Based on Age Groups as Weighted in '63 Act	(3) Actual Shares in 1966	(4) (2)/(1)	(5) (3)/(2)
Ala.	1.58	1.73	2.07	1.09	1.20
Alaska	.12	.12	.10	1.00	.83
Ariz.	.74	.74	.82	1.00	1.11
Ark.	.90	.97	1.16	1.08	1.20
Calif.	8.52	8.30	6.62	.97	.80
Colo.	.90	.91	.88	1.01	.97
Conn.	1.30	1.23	.98	.95	.80
Del.	.23	.22	.17	.96	.77
D.C.	.37	.31	.25	.84	.81
Florida	2.66	2.50	2.82	.94	1.13
Georgia	1.99	2.19	2.62	.91	1.20
Hawaii	.33	.39	.38	1.18	.97
Idaho	.32	.34	.40	1.06	1.18
Ill.	4.87	4.58	3.65	.94	.80
Ind.	2.24	2.20	2.20	.98	1.00
Iowa	1.26	1.24	1.32	.98	1.06
Kansas	1.02	1.01	1.07	.99	1.06
Ky.	1.46	1.58	1.89	1.08	1.20
La.	1.62	1.69	2.03	1.04	1.20
Maine	.45	.46	.54	1.02	1.17
Md.	1.61	1.62	1.41	1.01	.87
Mass.	2.45	2.34	1.95	.96	.83
Mich.	3.76	3.70	3.62	.98	.98
Minn.	1.63	1.58	1.66	.97	1.05
Miss.	1.06	1.19	1.42	1.12	1.19
Mo.	2.06	1.98	1.94	.96	.98
Montana	.32	.33	.36	1.03	1.09
Neb.	.68	.66	.68	.97	1.03
Nevada	.20	.19	.15	.95	.79
N.H.	.31	.30	.31	.97	1.03
N.J.	3.10	2.94	2.35	.95	.80
N.M.	.47	.49	.59	1.04	1.20
N.Y.	8.27	7.74	6.18	.94	.80
N.C.	2.25	2.55	3.05	1.13	1.20

Table 3.3.1 - continued

	(1) Shares Based on Total 1965 Population	(2) Shares Based on Age Groups as-Weighted in '63 Act	(3) Actual Shares in 1966	(4) (2)/(1)	(5) (3)/(2)
N.D.	.30	.31	.37	1.03	1.19
Ohio	4.70	4.56	4.46	.97	.98
Okla.	1.14	1.18	1.40	1.04	1.19
Oregon	.87	.88	.86	1.01	.98
Pa.	5.27	5.12	5.09	.97	.99
R.I.	.42	.41	.41	.98	1.00
S.C.	1.16	1.37	1.64	1.18	1.20
S.D.	.32	.32	.38	1.00	1.19
Tenn.	1.76	1.88	2.26	1.07	1.20
Texas	4.83	4.96	5.66	1.03	1.14
Utah	.45	.47	.53	1.04	1.13
Vermont	.18	.18	.21	1.00	1.17
Va.	2.04	2.21	2.56	1.08	1.16
Wash.	1.37	1.41	1.36	1.03	.96
W. Va.	.83	.92	1.10	1.11	1.20
Wis.	1.90	1.84	1.88	.97	1.03
Wyo.	.16	.15	.15	.94	1.00
Guam	.03	.03	.04	1.00	1.33
P.R.	1.21	1.22	1.69	1.01	1.39
V.I.	.02	.01	.02	.5	2.00
Amer.Samoa	.01	.01	.01	1.00	1.00

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[a] State shares add to 90.00 percent (except for rounding) as ten percent of the federal appropriation for Section 4 was retained for research to be administered by the U.S. Office of Education. The state shares are based on population estimates provided by the Reference, Estimates, and Projections Branch, National Center for Educational Statistics, U.S. Office of Education and on income data from the U.S. Department of Commerce, Office of Business Economics, Survey of Current Business, Vol. 44, No. 8, August 1964.

$315,000 more than it would have received if only total population were used.

When allotment ratios (as constrained in the 1963 V.E. Act) are used as an additional factor in allotting the federal appropriation among the states, another set of state shares results. As shown by comparing column (3) with columns (1) and (2) in Table 3.3.1, the general result is that whatever change occurred between columns (1) and (2) is reinforced by introducing the allotment ratios. That is, a state with a relatively larger percent of its population in the 15-19 age group is likely to have a relatively lower PCPI. This is reasonable because the young people are either not earning income or are not earning incomes as high as older persons. For the ten most populous states, only Florida has low PCPI despite having a relatively high percent of its population outside the 15-19 age bracket. Another notable feature of the ten most populous states is that, with the exception of Texas, their shares are decreased when weighted age groups are used and their shares are decreased even further when PCPI is used in conjunction with the weighted age groups. For every $100 in federal appropriations, South Carolina receives $1.64 when allotment ratios are used instead of $1.37 if only the weighted age groups are used. In 1966, South Carolina received $405,000 more than it would have received if only the three weighted age groups were used.

Though there is no requirement in the act that funds allocated on the basis of specific age groups be spent on programs designed for those age groups, the basic question may still be asked, can some method of measuring a state's need for vocational education be based on a priori rationality? The economist's theoretical answer to this question would be that expenditures on vocational education ought to be allocated among the states such that the marginal rates of return on those expenditures would be equated (provided that the marginal rate of return was at least as great as on alternative investments). Such a concept is very difficult to specify fully in the context of a public program like vocational education. In addition there is no provision in the administration of the vocational education program to generate the type of data needed to calculate marginal rates of return nor would such an approach take into consideration the concept of equality of educational opportunity.*

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*For a discussion of some of these issues see Bruce F. Davie, "Using Benefit-Cost Analysis in Planning and Evaluating Vocational Education," a paper prepared for David S. Bushnell, Director, Division of Adult and Vocational Research, U.S. Office of Education (mimeo), November, 1965.

If allocation of funds on the basis of rates of return is impossible it may still be feasible to develop a better measure of state-by-state program need based on population data. Clearly not everyone between the ages of 15 to 65 is a potential vocational education student. During any given year some individuals in this broad age span are enrolled in educational programs leading to a baccalaureate or higher academic degrees, others are in the military services, and still others are enrolled in non-public secondary schools. With perhaps a very small number of exceptions such individuals cannot be considered potential vocational education students. This would be an unimportant point to raise if such individuals represented the same fraction of the population in every state. This is not the case as indicated in Table 3.3.2 where the ratio of potential students for vocational education programs to the total population in the three age groups are presented. The number of potential students was calculated from the 1960 Census data by subtracting in each age group the number enrolled in non-public secondary schools, in the military service, and in college. Since the Census data make no distinction between junior college and four year college enrollees it was necessary to add back in junior college enrollments provided by the American Association of Junior Colleges. This was done on the grounds that students in institutions offering post secondary education which does not lead to the baccalaureate degree are actual or potential vocational education students; as these enrollment figures were not broken down by age it was assumed that half the junior college enrollment fell in the 15-19 year old category and half in the 20-24 year old group. The computer was used to determine what state shares of the federal appropriation would have been in 1960 had the Vocational Education Act of 1963 been in effect. Then state shares were calculated based on the measure of potential students in 1960 for each of the three age groups. The degree of change in state shares is reflected by the ratios listed in the last column of Table 3.3.2. (So that the detailed Census data could be used the comparison had to be made for 1960; had such detailed data been available for 1966, when the 1963 Act was in effect, any significant change from the 1960 ratios would probably be accounted for by changes in the portion of a state's population in military service.) States with large military establishments, like Alaska, Hawaii and Guam, would experience a large reduction in their shares of the federal appropriation. States like Massachusetts and Rhode Island with large enrollments in colleges and non-public secondary schools also would experience smaller shares of the federal appropriations. No state would receive an allotment more than ten percent larger. To summarize -- the allotment process could be improved by changing the definition of the three age groups to more nearly reflect the potential number of vocational education students in each state. The Bureau of the Census could supply annual estimates of potential students. The

TABLE 3.3.2

RATIO OF "POTENTIAL" STUDENTS TO ACTUAL POPULATION BY AGE GROUP AND STATE SHARES BASED ON ACTUAL POPULATION AND ON "POTENTIAL" STUDENTS[a]

(State shares expressed as a percent of a hypothetical federal appropriation under the 1963 Vocational Education Act in 1960)

	Ratio of Potential Students to Actual Population			State shares based on		
STATES	15-19 year olds	20-24 year olds	25-65 year olds	Actual Population	"Potential" Students	(5)/(4) (Ratio)
	(1)	(2)	(3)	(4)	(5)	(6)
U.S.	.85	.84	.98			
Ala.	.93	.88	.98	2.11	2.24	1.06
Alaska	.68	.46	.83	.11	.07	.64
Ariz.	.88	.83	.97	.74	.75	1.04
Ark.	.92	.88	.99	1.11	1.18	1.06
Calif.	.84	.82	.97	6.09	6.05	.99
Colo.	.82	.79	.97	.86	.82	.95
Conn.	.81	.84	.99	.93	.90	.97
Del.	.84	.83	.98	.16	.16	1.00
D.C.	.78	.78	.96	.30	.28	.93
Fla.	.90	.85	.98	2.55	2.64	1.04
Ga.	.91	.84	.98	2.58	2.67	1.03
H.I.	.71	.57	.91	.37	.30	.81
Idaho	.93	.87	.98	.40	.43	1.08
Ill.	.81	.87	.99	3.83	3.74	.98
Ind.	.87	.86	.99	2.35	2.42	1.03
Iowa	.84	.87	.99	1.43	1.43	1.00
Kan.	.85	.79	.97	1.14	1.11	.97
Ky.	.86	.83	.98	1.94	1.93	.99
La.	.86	.86	.99	2.02	2.04	1.01
Maine	.84	.80	.98	.57	.56	.98
Md.	.82	.89	.97	1.41	1.41	1.00
Mass.	.76	.78	.98	2.15	1.98	.92
Mich.	.84	.87	.99	3.60	3.60	1.00
Minn.	.84	.85	.99	1.77	1.75	.99
Miss.	.92	.88	.98	1.43	1.52	1.06
Mo.	.84	.84	.99	2.05	2.03	.99
Mont.	.84	.81	.98	.35	.35	1.00
Neb.	.83	.82	.98	.72	.70	.97
Nev.	.87	.80	.96	.11	.10	.91
N.H.	.78	.80	.98	.31	.29	.94
N.J.	.81	.83	.98	2.22	2.15	.97
N.M.	.88	.80	.96	.58	.58	1.00
N.Y.	.80	.86	.99	6.15	5.95	.97

TABLE 3.3.2 - continued

	Ratio of Potential Students to Actual Population			State shares based on		
	15-19 year olds	20-24 year olds	25-65 year olds	Actual Population	"Potential" Students	(5)/(4) (Ratio)
	(1)	(2)	(3)	(4)	(5)	(6)
N.C.	.90	.83	.98	3.10	3.20	1.03
N.D.	.86	.84	.98	.39	.39	1.00
Ohio	.85	.88	.99	4.37	4.40	1.01
Okla.	.89	.79	.98	1.41	1.42	1.01
Ore.	.87	.83	.99	.83	.83	1.00
Pa.	.82	.88	.99	5.26	5.18	.98
R.I.	.71	.68	.97	.43	.37	.86
S.C.	.88	.80	.97	1.68	1.75	1.04
S.D.	.86	.80	.98	.40	.39	.98
Tenn.	.89	.87	.99	2.29	2.36	1.03
Texas	.88	.82	.97	5.48	5.53	1.01
Utah	.87	.79	.97	.54	.54	1.00
Vt.	.75	.83	.99	.23	.21	.91
Va.	.86	.76	.96	2.54	2.45	.96
Wash.	.87	.76	.97	1.34	1.30	.97
W. Va.	.92	.91	1.00	1.16	1.24	1.07
Wis.	.83	.87	.99	1.90	1.91	1.01
Wyo.	.94	.89	.98	.15	.16	1.07
Guam	.60	.38	.92	.04	.02	.50
P.R.	.94	.92	.99	1.74	1.89	1.09
V.I.	.99	.98	1.00	.02	.02	1.00
Amer. Samoa	1.00	1.00	1.000	.01	.01	1.00

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[a] For each age group "potential" students equal actual population minus population enrolled in private schools minus population enrolled in public schools beyond grade twelve minus population in military service plus population enrolled full-time in junior colleges. Population data from the 1960 Census of Population and junior college enrollment from the American Association of Junior Colleges. State shares add to 90.00 percent (except for rounding) as ten percent of the federal appropriation for Section 4 is retained for research to be administered by the Office of Education.

analysis, based on 1960 data, indicated that such a change would make a major difference in allotments in only a few states. Since, however, Congress clearly intended state allotments to reflect relative need for vocational education the measure of potential suggested here would better match that intent.

A different approach to the question of a priori rationality in that part of the allotment process concerned with measuring program need could be based on developing appropriate weights for various age groups in a state's total population.* Assume that the benefits from vocational education are not a function of age per se, e.g. the annual benefits for the first year after completion of a unit of vocational education are the same for a twenty-year-old as for a forty five-year-old and that the benefits in subsequent years are the same in both cases. If this assumption is made then weights for each age group could be based on estimated mortality rates and labor force participation rates.**

The weights for the younger age groups would be higher than for older age groups reflecting the fact that they will spend more time in the labor force. The weights would, however, show the effect of discounting future benefits by an appropriate discount rate, though this might be offset by an assumed rate of growth of productivity. Such a method for determining the relative weights to be assigned to particular age groups and for determining state shares can be expressed as follows:

$$Z_i = \frac{\sum_{j=i}^{50} \frac{R_j M_{ij} (1+q)^j}{(1+r)^j}}{\sum_{i=1}^{51} \sum_{j=i}^{50} \frac{R_j M_{ij} (1+q)^j}{(1+r)^j}}$$

$$S_i^n = \frac{P_i^n A^n}{\sum_{m=1}^{55} (P_i^n A^n)} Z_i$$

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*The remainder of this sub-section may be skipped by the reader uninterested in argumentation in an atmosphere rarified by extreme assumptions. The main line of the analysis begins again with the sub-section entitled "The Mathematics of Allotment Formulas."

** Participation rates for this purpose should include students as in the labor force.

$$S^m = \sum_{i=1}^{50} S_i^n$$

where: Z_i is the fractional weight for the i th age group. There are 50 age groups from 15 year olds (i=1) to 64 year olds (i=50).

j is the number of years the i th age group will remain in the labor force, assuming for sake of simplicity that all workers retire at age 65.

R_j is the labor force participation rate for the age level 15 + j. The participation rate is defined to treat students who are in school as in the labor force.

M_{ij} is the survival rate, reflecting mortality, for members of the i th age group to the j th additional year of life.

q is the rate of growth of productivity.

r is the rate at which future benefits are discounted.

S_i^n is the share of the federal appropriation received by the n th state on the basis of its proportion of the i th age group. (The number of states, n, is 55.)

P_i^n is the population in the n th state in the i th age group.

A^n is the allotment ratio for the n th state.

S^n is the total share of the federal appropriation received by the n th state.

If state shares were calculated on this basis the older age group, 25-65 year olds, would receive a heavier weight than under the current legislation. The higher the rate of discount used the greater the weight attached to the older age group. The higher the rate of growth of productivity assumed the greater the weights attached to the younger age groups. As long as federal legislation does not require funds allotted on the basis of particular age groups to be expended for the vocational education of students in those age groups no system of age weights can be defended on a priori grounds. The foregoing approach to the question of appropriate age weights only serves more to point up the relative benefits of education for older workers which the schema suggests than to provide a solution to the problem.

The Mathematics of Allotment Formulas

The Vocational Education Act of 1963 includes within its allotment formula an adjustment for the relative fiscal capacity of states, or equalization. This aspect of intergovernmental fiscal relations, common to many other federal grant-in-aid programs, will be discussed in detail.

Whatever measure of relative state program need may be used there are three basic mathematical functions, each with specific parameter values, which have been applied in grant-in-aid programs. Per capita personal income has been used as the measure of state fiscal capacity, although other measures have been suggested. The three mathematical forms are:

1. a linear expression .... $A_1 = (1 - .5R)$
2. a rectangular hyperbola.... $A_2 = \frac{1}{R}$
3. a parabola .... $A_3 = (1 - .5R)^2$

where R is the ratio of a state's per capita personal income (PCPI) to the nation's PCPI and where A_1, A_2, and A_3 are the resulting allotment ratios which determine state shares, per unit of program need, (e.g. per person) of the federal appropriation.* In forms 1 and 3 the value of (1 - .5R) is often arbitrarily constrained to something less than the range between zero and one. The relationship between a state's allotment ratio (A_i) and that state's share (S_i) of the federal appropriation, if population in the state (P_i) is used as a measure of program need, is illustrated in the following equation:

$$S_i = \frac{A_i \ P_i}{\sum_{i=1}^{n} (A_i \ P_i)}$$

Equalization is introduced into a grant-in-aid program by the use of one of the above mathematical functions since all three inversely relate allotment ratios to relative state PCPI. The degree of equalization may be defined as the rate at which A decreases as R increases or the first derivative of the function. The three functions and their first derivatives are shown in Figure 1. There are two ways to examine the implications of these functions: one is with a distribution of R's fixed at a point in time, and the other is with a changing

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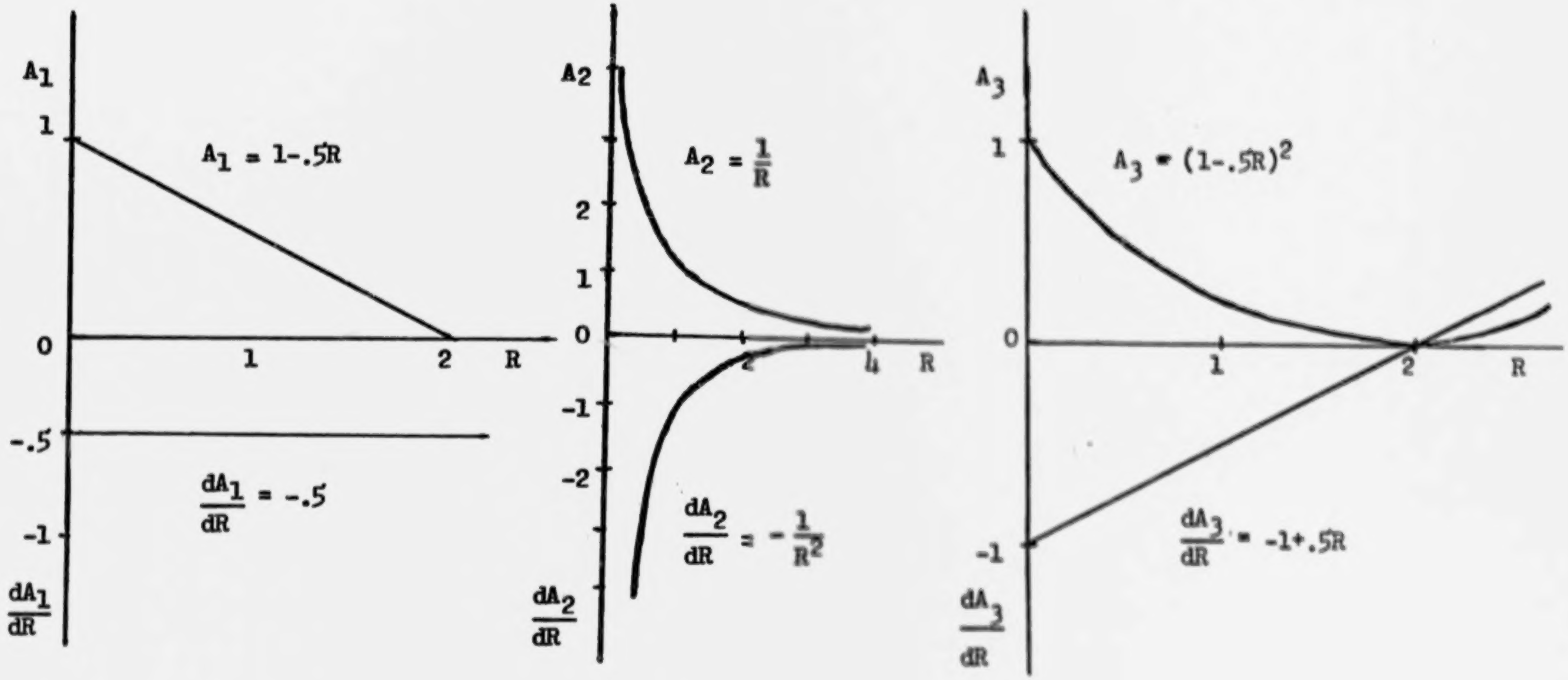
*PCPI as used in these formulas is often taken as a three or five year moving average. See The Role of Equalization in Federal Grants, Advisory Commission on Intergovernmental Relations, January, 1964, for the details of specific programs.

Figure 1. Allotment Ratio Functions and Their First Derivatives



distribution of R's over time. The first is illustrated below where the values of A_1, A_2, and A_3 are presented for Mississippi, with the lowest R, and the District of Columbia, with the highest R, as well as these values for a state whose PCPI equals to national PCPI (R = 1.000).*

	Mississippi R=.590	State whose PCPI equals national PCPI R=1.000	District of Columbia R=1.350
$A_1= (1-.5R) =$	.705	.500	.325
$A_2= \frac{1}{R} =$	1.690	1.000	.741
$A_3= (1-.5R)^2=$	.497	.250	.106

Equalization can be illustrated by comparing the A values for Mississippi and the District of Columbia. In the case of the linear function for every $1.00 per unit of program need received by the District of Columbia, Mississippi receives $2.16, i.e., A_1 for Mississippi is 216% of A_1 for the District of Columbia. The hyperbolic function equalizes to a slightly greater degree, Mississippi receives $2.28 per unit of program need for each $1.00 received by the District of Columbia. The parabolic function results in a marked increase in the degree of equalization: A_3 for Mississippi is 468% of A_3 for the District of Columbia.

Tracing the impact on the allotment received by a state where PCPI is changing, relative to national PCPI, is the second way of examining the implications of the functions. The rate at which A changes as R changes becomes relevant: one has to consider the first derivatives of the functions. The first derivative of the linear function is, of course, a constant, as illustrated in Figure 1; thus, if the value of R for any state increases by .01, A_1 for that state decreases by .005, regardless of the initial value of R. In the case of the parabola, the slope of the function changes at a constant rate: if R increases, the decrease in A_3 experienced by poor states ($R<1$) will be relatively greater than for rich states ($R>1$).

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*R values computed for 1965. *Survey of Current Business*, Aug.1966,p.13.The District of Columbia as well as the four outlying areas, American Samoa, Guam, Puerto Rico, and the Virgin Islands, are usually treated as states in grant-in-aid programs.

With the hyperbolic function, the rate at which A_2 decreases as R increases approaches 0 asymptotically. As in the case of the parabolic function, when R increases the decrease in A_2 is relatively greater for poor states than for rich states. Thus with the hyperbolic function, as a rich state gets a little richer it loses very little federal aid; as a poor state gets a little richer it loses a great deal of federal aid. These differences in impact over time can be illustrated with the following example. Between 1960 and 1965 both Georgia and Michigan experienced an increase in R values of .05. For Georgia the increase was from .74 to .79, and for Michigan from 1.05 to 1.10.* The following figures show the effect of an increase of .05 in R for the two states:

	Georgia	Michigan
ΔA_1	-.025	-.025
ΔA_2	-.080	-.043
ΔA_3	-.031	-.023

Both in the case of the hyperbola and the parabola, especially the former, the poor state loses more federal funds per unit of program need than the rich state.

The degree of equalization which is implicit in the choice of a particular function could only be defended on the grounds of allocative efficiency if the relationship between R and social rates of return to grant-in-aid programs were known. In the absence of such knowledge the choice of function forms must remain essentially political.

The actual amount of equalization, that is, the portion of the aggregate federal appropriation which is reallotted from rich states to poor states, depends upon the degree of equalization and the distribution of R values, given the distribution of the measure of program need. The effect of a change in mathematical function cannot be demonstrated for any one state without considering the effects on all other states. The allotment formula contained in Section 4 of the Vocational Education Act of 1963 was used to make such a demonstration.** The amount of equalization was measured by comparing actual state shares for 1966 with state shares as they would have been without the equalization provision. The portion of the appropriation in effect reallotted was 6.23 percent, that is the sum of the increases in shares received by poor states.* Had the constraints not been imposed on the allotment ratios, as determined by the linear function, 7.13 percent of the appropriation would have been reallotted. The hyperbolic function would have resulted in an amount of equalization equal to 8.98 percent and the parabola, 14.47 percent.

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*Ibid.

**The formula was shown above in the first footnote in this section.

Table 3.3.3 lists the state-by-state shares that would have been obtained by using various sets of allotment ratios. Column 1 lists the shares for all states of the federal appropriation in 1966, $177,500,000, derived in accordance with the Act as described above, and which serve as the basis of comparisons. In column 2 the state shares are those which would pertain if there were no constraint limiting the value of the allotment ratios. The percentage changes in state share resulting from eliminating the constraints are listed in column 3. The shares of all states are affected by releasing the constraints on the allotment ratios. The states most affected are those whose allotment ratios were formerly constrained. Mississippi, for example, receives a 19 percent gain while the District of Columbia experiences 20 percent loss. Those states whose allotment ratio is between .4 and .6 also are affected due to the interdependence of state shares in such an allotment formula. The result of this interdependence is that all states with allotment ratios of less than .6 lose when federal funds are redistributed to states with ratios greater than .6. This includes 21 states whose PCPI is below that of the nation. This results because there are a number of states with allotment ratios well in excess of .6 and fewer states with ratios only slightly less than .4. Furthermore, applying constraints to the allotment ratio in an attempt to limit the degree of equalization has the perverse effect of eliminating equalization among the two groups of states affected by the constraints. For instance, West Virginia and Mississippi receive the same amount of federal aid per unit of program need despite a large difference in PCPI; West Virginia's PCPI is 75 percent of the nation's whereas Mississippi's is only 55 percent. If a lesser degree of equalization is desired for political reasons, it would be more rational to change the parameters of the allotment ratio function rather than impose constraints on the

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*See Table 3.3.1 above.

TABLE 3.3.3

Effects of Alternative Allotment Ratios on State Shares:
An Example Based on the Vocational Education Act of 1963
(State shares expressed as a percent of federal appropriation for fiscal 1966)[a]

States[b]	(1) State Shares if $A = (1-.5R)$ Constrained $.4 \leq A \leq .6$	(2) State Shares if $A = (1-.5R)$ Unconstrained	(3) $\frac{(2)-(1)}{(1)}$ (percent)	(4) State Shares if $A = \frac{1}{H}$	(5) $\frac{(4)-(1)}{(1)}$ (percent)	(6) State Shares if $A = (1-.5R)^2$	(7) $\frac{(6)-(1)}{(1)}$ (percent)
Alabama	2.07	2.27	9.7	2.51	21.3	2.90	40.1
Alaska	.10	.10	0.0	.10	0.0	.08	-20.0
Arizona	.82	.80	-2.4	.78	-4.9	.82	0.0
Arkansas	1.16	1.29	11.2	1.47	26.7	1.69	45.7
California	6.62	6.33	-4.4	6.50	-1.8	4.69	-29.2
Colorado	.88	.86	-2.8	.84	-5.1	.79	-10.7
Connecticut	.98	.84	-14.3	.91	-7.2	.58	-40.8
Delaware	.17	.14	-17.7	.16	-5.9	.09	-47.1
D.C.	.25	.20	-20.0	.22	-12.0	.12	-52.0
Florida	2.82	2.77	-1.8	2.72	-3.5	2.93	3.9
Georgia	2.62	2.70	3.0	2.85	8.8	3.27	24.8
Hawaii	.38	.37	-2.6	.36	-5.3	.34	-10.5
Idaho	.40	.40	0.0	.40	0.0	.44	10.0
Illinois	3.65	3.56	-2.5	3.68	0.8	2.81	-23.0
Indiana	2.20	2.16	-1.8	2.14	-2.7	2.11	-4.1
Iowa	1.32	1.30	-1.5	1.26	-4.6	1.30	-1.5
Kansas	1.07	1.05	-1.9	1.03	-3.7	1.07	0.0
Kentucky	1.89	1.97	4.2	2.09	10.6	2.41	27.5
Louisiana	2.03	2.12	4.4	2.25	10.8	2.59	27.6
Maine	.54	.53	-1.9	.54	0.0	.60	11.1
Maryland	1.41	1.39	-1.4	1.39	-1.4	1.19	-15.6
Massachusetts	1.95	1.91	-2.1	1.94	-0.5	1.57	-20.5
Michigan	3.62	3.55	-1.9	3.43	-5.3	3.24	-10.5
Minnesota	1.66	1.63	-1.8	1.60	-3.6	1.64	-1.2
Mississippi	1.42	1.69	19.0	2.07	45.8	2.33	64.1
Missouri	1.94	1.91	-1.6	1.88	-3.1	1.82	-6.2
Montana	.36	.35	-2.8	.35	-2.8	.37	2.8
Nebraska	.68	.67	-1.5	.66	-3.0	.68	0.0
Nevada	.15	.12	-20.0	.14	-6.7	.08	-46.7
New Hampshire	.31	.31	0.0	.31	0.0	.32	3.2
New Jersey	2.35	2.30	-2.1	2.36	0.4	1.80	-23.4
New Mexico	.59	.58	-1.7	.58	-1.7	.65	10.2
New York	6.18	5.78	-6.5	5.98	-3.2	4.17	-32.5
North Carolina	3.05	3.16	3.6	3.35	9.8	3.85	26.2
North Dakota	.37	.36	-2.7	.37	0.0	.41	10.8
Ohio	4.46	4.38	-1.8	4.23	-5.2	4.00	-10.3
Oklahoma	1.40	1.37	-2.1	1.38	-1.4	1.53	9.3

TABLE 3.3.3 (cont.)

States	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Oregon	.86	.84	-2.3	.83	-3.5	.80	-7.0
Pennsylvania	5.09	5.00	-1.8	4.89	-3.9	4.75	-6.7
Rhode Island	.41	.40	-2.4	.40	-2.4	.39	-4.9
South Carolina	1.64	1.82	11.0	2.05	25.0	2.37	44.5
South Dakota	.38	.37	-2.6	.37	-2.6	.41	7.9
Tennessee	2.26	2.36	4.4	2.53	12.0	2.92	29.2
Texas	5.66	5.56	-1.8	5.52	-2.5	6.01	6.2
Utah	.53	.52	-1.9	.52	-1.9	.56	5.7
Vermont	.21	.20	-4.8	.20	-4.8	.23	9.5
Virginia	2.56	2.51	-2.0	2.50	-2.3	2.75	7.4
Washington	1.36	1.33	-2.2	1.27	-6.4	1.16	-14.7
West Virginia	1.10	1.11	0.9	1.17	6.4	1.33	20.9
Wisconsin	1.88	1.84	-2.1	1.81	-3.7	1.81	-3.7
Wyoming	.15	.15	0.0	.14	-6.7	.14	-6.7
Guam	.04	.04	0.0	.01	-75.0	.07	75.0
Puerto Rico	1.69	2.40	42.0	.69	-59.2	2.72	60.9
Virgin Islands	.02	.03	50.0	c	--	.03	50.0
American Samoa	.01	.02	100.0	c	--	.02	100.0

a. State shares calculated from population estimates provided by the Reference, Estimates, and Projections Branch, National Center for Educational Statistics, U.S. Office of Education, and income data from Survey of Current Business, Vol. 44, No. 8, August, 1964. R is the ratio of state per capita personal income for 1961, 1962, and 1963 to national per capita personal income for 1961, 1962, and 1963. State shares add to 90.00 percent (except for rounding) as ten percent of the federal appropriation was retained for research to be administered by the U.S. Office of Education.

b. The term "states" includes the District of Columbia and the four outlying areas.

c. Less than .005.

ratios themselves.* A linear function with a lesser slope would limit the degree of equalization by compressing the range of allotment ratios. By choosing appropriate parameters the entire range of allotment ratios could be, for example, set within the limits of .4 and .6 without the distortion which arises when constraints are imposed.**

The state shares listed in column 4, Table 3.3.3 would pertain if the hyperbolic function were used to obtain allotment ratios. The percentage differences between these state shares and the actual shares for 1966 are shown in column 5. Similarly column 6 lists the state shares resulting from use of the parabolic function and column 7 the percentage differences. These changes in state shares demonstrate not only the effect of different function forms, but also the interdependency of state shares inherent in these grant-in-aid allotment formulas. Though this demonstration has been based on the formula contained in the Vocational Education Act of 1963, a similar analysis could be made for any other program which allots a fixed appropriation to a number of political subdivisions in inverse proportion to some measure of fiscal capacity.

Measures of Fiscal Capacity

The problem of appropriately measuring fiscal capacity has attracted considerable interest recently.*** The

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*The legislative history of the Vocational Education Act of 1963 indicates that the imposition of the constraints of .4 and .6 on the allotment ratio was a compromise in Conference Committee between the Senate version which set constraints at .25 and .75 (which in effect is no different than the unconstrained linear function) and the House version which did not include an equalization provision. See Douglas E. Kliever, Vocational Education Act of 1963: A Case Study in Legislation, (Washington, D.C.: American Vocational Association, Inc., 1965), pp. 55-56.

**The formula $A=(.722-.222R)$ would serve this purpose when the poorest state has a value of R equal to .55.

***M.O. Clement, "Interstate Fiscal Equity and Federal Grants-in-aid: An Empirical Method and its Application, Fiscal 1962," Southern Economic Journal XXIX, April 1963; Richard A. Rossmiller, "The Equalization Objective in State Support Programs: An Analysis of Measures, Need, and Ability," National Tax Journal XVIII, December 1965; Thomas P. Hopkins, "Income Distribution in Grants-in-aid Equity Analysis," National Tax discussion above has concentrated on the degree of equalization determined by the functions used to calculate allotment ratios and the resulting amount of equalization, using the Vocational Education Act of 1963 as an example. Any discussion of equalization, however, presupposes an adequate measure of relative fiscal capacity (R). The ratio of state PCPI to national PCPI has been used as such a measure, probably because these data are published annually. The staff of the Advisory Commission on Intergovernmental Relations suggested six alternative measures of fiscal capacity and estimated state-by-state values for these measures for 1960.* Two of these measures were derived from Census data; per capita income, using the census definition of income of families and unrelated individuals which differs from the national income accounts' definition, and the same per capita income except that the income of families with less than $2000 and unrelated individuals with less than $1,000 of income was excluded. The third suggested measure was income produced and the fourth a composite of the first three. The fifth was actual per capita tax collections and the sixth the per capita yield of a representative tax system. Without discussing the relative merits of these alternative measures of fiscal capacity the state shares of a federal grant-in-aid appropriation resulting from their use are presented in Table 3.3.4. These state shares have been calculated using the allotment formula contained in the Vocational Education Act of 1963, substituting the above measures of fiscal capacity for PCPI and using 1960 population data. In addition state shares listed in Table 3.3.4, column 14, have been similarly calculated but using Census figures for median family income as a measure of fiscal capacity. If income is to be used as a measure of fiscal capacity a median is preferable, on *a priori* grounds, to a mean (per capita). This preference is based on the Census findings that income distributions by state are skewed toward the rich as well as the supposition that state and local tax structures are regressive. Since PCPI is more affected than the median by extreme high incomes and since states and localities have been reluctant to impose proportional or progressive overall taxes, median income better reflects fiscal capacity. When the distribution of income is extremely skewed, as in the case of Delaware, the advantage of using median income as a measure of fiscal capacity is apparant. In 1960, for example, the PCPI for Delaware was 36 percent greater than that for the nation while median family income was only ten percent greater

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Journal XVIII, June 1965; *Measures of State and Local Fiscal Capacity and Tax Effort*, Advisory Commission on Intergovernmental Relations, October 1962.

[Measures of State and Local Fiscal Capacity and Tax Effort, *op. cit.*

TABLE 3.3.4

Effects of Alternative Measures of Fiscal Capacity on State Shares: An Example Based on the Vocational Education Act of 1963, Using 1960 Data (State shares expressed as a percent of a federal appropriation)[a]

States[b]	(1) State Shares Using Per Capita Personal Income	(2) State Shares Using Per Capita Income of Families & Unrelated Individuals	(3) $\frac{(2)-(1)}{(1)}$ (percent)	(4) State Shares Using Per Capita Income of Families & Unrelated Individuals (Above the minimum)[c]	(5) $\frac{(4)-(1)}{(1)}$ (percent)	(6) State Shares Using Per Capita Income Produced	(7) $\frac{(6)-(1)}{(1)}$ (percent)
1 Alabama	2.33	2.31	- .86	2.34	.42	2.35	.15
2 Alaska	.10	.09	-10.00	.09	-10.00	.10	.00
3 Arizona	.73	.67	-8.22	.67	-8.22	.69	-5.48
4 Arkansas	1.27	1.28	.78	1.32	3.93	1.32	3.93
5 California	5.71	5.57	-2.46	5.41	-5.26	5.95	4.20
6 Colorado	.85	.84	-1.18	.84	-1.18	.86	1.17
7 Connecticut	.81	.82	1.23	.80	-1.24	.97	19.75
8 Delaware	.13	.18	38.46	.17	30.76	.21	61.53
9 D.C.	.25	.27	8.00	.26	4.00	.15	-40.00
10 Florida	2.50	2.41	-3.60	2.43	-2.80	2.69	7.60
11 Georgia	2.71	2.70	- .37	2.74	1.10	2.68	-1.11
12 Hawaii	.37	.35	-5.41	.35	-5.41	.37	.00
13 Idaho	.39	.38	-2.57	.38	-2.57	.39	.00
14 Illinois	3.78	3.84	1.58	3.79	.26	3.46	-8.47
15 Indiana	2.33	2.29	-1.72	2.29	-1.72	2.22	-4.73
16 Iowa	1.42	1.46	2.81	1.46	2.81	1.36	-4.23
17 Kansas	1.12	1.08	-3.58	1.09	-2.68	1.18	5.35
18 Kentucky	2.07	2.06	- .49	2.09	.96	2.01	-2.80
19 Louisiana	2.10	2.10	.00	2.13	1.42	1.98	-5.72
20 Maine	.56	.56	.00	.57	1.78	.61	8.92
21 Maryland	1.38	1.37	- .73	1.35	-2.18	1.60	15.94
22 Massachusetts	2.10	2.15	2.38	2.13	1.42	2.20	4.76
23 Michigan	3.55	3.52	- .85	3.52	- .85	3.67	3.38
24 Minnesota	1.76	1.72	-2.28	1.73	-1.71	1.67	-5.12
25 Mississippi	1.73	1.75	1.15	1.79	3.46	1.80	4.04
26 Missouri	2.04	2.17	6.37	2.19	7.35	1.98	-2.95
27 Montana	.35	.35	.00	.35	.00	.34	-2.86
28 Nebraska	.72	.74	2.77	.74	2.77	.66	-8.34
29 Nevada	.10	.09	-10.00	.09	-10.00	.07	-30.00
30 New Hampshire	.31	.29	-6.46	.29	-6.46	.33	6.45
31 New Jersey	2.17	2.09	-3.69	2.03	-6.46	2.42	11.52
32 New Mexico	.57	.55	-3.51	.56	-1.76	.53	-7.02
33 New York	5.70	6.01	5.43	5.93	4.03	5.48	-3.86
34 North Carolina	3.35	3.38	.89	3.42	2.08	3.17	-5.38
35 North Dakota	.41	.41	.00	.41	.00	.38	-7.32

TABLE 3.3.4 (cont.)

(8) State Shares Using Composite Series[d]	(9) $\frac{(8)-(1)}{(1)}$ (percent)	(10) State Shares Using Per Capita Actual Tax Collections	(11) $\frac{(10)-(1)}{(1)}$ (percent)	(12) State Shares Using Per Capita Yield of a Representative Tax System	(13) $\frac{(12)-(1)}{(1)}$ (percent)	(14) State Shares Using Median Family Income	(15) $\frac{(14)-(1)}{(1)}$ (percent)	
2.35	.15	2.43	4.29	2.33	.00	2.24	-3.87	1
.10	.00	.15	50.00	.17	70.00	.09	-10.00	2
.70	-4.11	.64	-12.33	.67	-8.22	.67	-8.22	3
1.30	2.36	1.26	.79	1.20	-5.52	1.31	3.14	4
5.87	2.80	4.65	-18.57	5.57	-2.46	6.05	5.95	5
.86	1.17	.74	-12.95	.74	-12.95	.84	-1.18	6
.94	16.04	1.08	33.33	1.01	24.69	.89	9.87	7
.19	46.15	.21	61.53	.18	38.46	.18	38.46	8
.19	-28.00	.35	40.00	.28	12.00	.35	40.00	9
2.62	4.80	2.50	.00	2.28	-8.80	2.67	6.80	10
2.68	-1.11	2.75	1.47	1.79	1.95	1.66	-1.85	11
.37	.00	.30	-18.92	.45	21.62	.31	-16.22	12
.39	.00	.35	-10.26	.31	-20.52	.36	-7.70	13
3.56	-5.83	4.57	20.89	3.93	3.96	3.90	3.17	14
2.25	-3.44	2.51	7.72	2.25	-3.44	2.21	-5.16	15
1.37	-3.53	1.26	-11.27	1.12	-21.13	1.43	.70	16
1.16	3.57	.95	-15.18	.91	-18.75	1.10	-1.79	17
2.03	-1.94	2.24	8.21	2.01	-2.90	2.03	-1.94	18
2.00	-4.77	1.77	-15.72	1.87	-10.96	2.05	-2.39	19
.60	7.14	.48	-14.29	.58	3.57	.54	-3.58	20
1.55	12.31	1.52	10.14	1.61	16.66	1.32	-4.35	21
2.25	7.14	2.02	-3.81	2.52	20.00	2.14	1.90	22
3.63	2.25	3.36	-5.36	3.75	5.63	3.27	-7.89	23
1.70	-3.41	1.48	-15.91	1.57	-10.80	1.62	-7.96	24
1.77	2.31	1.60	-7.52	1.69	-2.32	1.75	1.15	25
2.00	-1.97	2.55	25.00	2.07	1.47	2.21	9.33	26
.34	-2.86	.29	-17.15	.23	-34.29	.33	-5.72	27
.68	-5.56	.75	4.16	.53	-26.39	.75	4.16	28
.08	-20.00	.08	-20.00	.07	-30.00	.10	0.00	29
.32	3.22	.30	-3.23	.29	-6.46	.28	-9.68	30
2.36	8.75	2.65	22.11	2.58	18.89	2.16	- .47	31
.54	-5.27	.56	-1.76	.48	-15.79	.51	-10.53	32
5.55	-2.64	4.32	-24.22	7.23	26.84	6.57	15.26	33
3.20	-4.48	3.34	- .30	3.28	-2.09	3.30	-1.50	34
.39	-4.88	.32	-21.96	.29	-29.27	.38	-7.32	35

TABLE 3.3.4 (cont.)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
36 Ohio	4.27	4.28	.23	4.27	.00	4.2[illegible]	.23
37 Oklahoma	1.38	1.34	-2.90	1.36	-1.45	1.31	-5.08
38 Oregon	.82	.79	-3.66	.79	-3.66	.89	8.53
39 Pennsylvania	5.19	5.30	2.11	5.30	2.11	5.46	5.20
40 Rhode Island	.42	.43	2.38	.43	2.38	.47	11.90
41 South Carolina	1.91	1.93	1.04	1.95	2.09	1.94	1.57
42 South Dakota	.42	.42	.00	.43	2.38	.39	-7.15
43 Tennessee	2.45	2.43	- .82	2.49	1.63	2.47	.81
44 Texas	5.47	5.48	.18	5.52	.91	5.09	-6.95
45 Utah	.54	.51	-5.56	.51	-5.56	.49	-9.26
46 Vermont	.23	.23	.00	.23	.00	.24	4.34
47 Virginia	2.49	2.43	-2.41	2.45	-1.61	2.46	-1.21
48 Washington	1.32	1.24	-6.07	1.23	-6.82	1.35	2.27
49 West Virginia	1.18	1.22	3.38	1.23	4.23	1.14	-3.39
50 Wisconsin	1.89	1.87	-1.06	1.85	-2.12	1.93	2.11
51 Wyoming	.15	.15	.00	.15	.00	.15	.00
52 Guam[e]	.04	.04	.00	.04	.00	.04	.00
53 Puerto Rico[e]	1.71	1.72	.58	1.71	.00	1.72	.58
54 Virgin Islands[e]	.02	.02	.00	.02	.00	.02	.00
55 American Samoa[e]	.01	.01	.00	.01	.00	.01	.00

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a. State shares calculated using 1960 Census data for population by age group and, as a measure of fiscal capacity, data from Measures of State and Local Fiscal Capacity and Tax Effort, Advisory Commission on Intergovernmental Relations, October, 1962, and 1960 Census data for median family income. Unconstrained allotment ratios, A = (1-.5R), were used throughout; R is the ratio of state per capita personal income for 1959 to national per capita personal income for 1959. Income data were taken from Survey of Current Business, Vol. 44, No. 8, August, 1964. State shares add to 90 percent (except for rounding) as ten percent is reserved by the Act for research.

b. The term "states" includes the District of Columbia and the four outlying areas.

c. Excludes income of families with income under $2,000 and income of individuals with income under $1,000.

d. Composite of 1959 personal income (less federal payments), income produced (1959 estimated), and corporate net income in 1959.

e. Allotment ratios of .6 used throughout due to lack of data.

TABLE 3.3.4 (cont.)

(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	
4.28	.23	4.80	12.41	4.42	3.51	4.11	-3.75	36
1.33	-3.63	1.32	-4.35	1.25	-9.43	1.39	.72	37
.87	6.09	.70	-14.64	.81	-1.22	.80	-2.44	38
5.41	4.23	5.97	15.02	5.78	11.36	5.21	.38	39
.45	7.14	.43	2.38	.47	11.90	.42	.00	40
1.93	1.04	1.88	-1.58	1.94	1.57	1.82	-4.72	41
.40	-4.77	.33	-21.43	.30	-28.58	.40	-4.77	42
2.45	.00	2.50	2.04	2.43	.82	2.43	.82	43
5.18	-5.31	5.84	6.76	3.91	-28.52	5.53	1.09	44
.51	-5.56	.47	-12.97	.47	-12.97	.45	-16.67	45
.23	.00	.17	-26.09	.22	-4.35	.22	-4.35	46
2.48	- .41	2.81	12.85	2.54	2.00	2.37	4.82	47
1.35	2.27	1.38	4.54	1.36	3.03	1.23	-6.82	48
1.15	-2.55	1.19	.84	1.21	2.54	1.13	-4.24	49
1.91	1.05	1.72	-9.00	1.91	1.05	1.75	-7.41	50
.15	.00	.13	-13.34	.06	-60.00	.15	.00	51
.04	.00	.04	.00	.04	.00	.04	.00	52
1.72	.58	1.71	.00	1.72	.58	1.70	- .59	53
.02	.00	.02	.00	.02	.00	.02	.00	54
.01	.00	.01	.00	.01	.00	.01	.00	55

than that for the nation.

Since these alternative measures of fiscal capacity were calculated for 1960 the state shares listed in column 1, Table 3.3.4 are those which would have obtained had the Vocational Education Act of 1963 been in effect and had the unconstrained linear function been used with PCPI. Those columns listing percentage changes compare the results of using alternative measures of fiscal capacity in the same formula with the results listed in column 1. As may be expected, Delaware and the District of Columbia would receive the largest relative increases in shares if median family income were used due to their extremely skewed income distributions. The two states which would experience the greatest relative decreases in shares are Iowa and Utah indicating that the distributions of income in these states are the least skewed.

Equalization should be thought of in a broader sense than simply the allotment of a federal appropriation among the states. The Vocational Education Act of 1963 requires states to match federal funds at least dollar for dollar. This requirement perverts the equalization contained in the allotment formula. Poor states which receive more federal funds per unit of program need are required to raise relatively more funds from state and local sources.

The measure of fiscal capacity used in the equalization provision of many grant-in-aid programs should reflect differences in state price levels. In the case of vocational education a major portion of the costs of programs are influenced by local price levels. This would be true for teacher salaries and construction services. The cost of items such as textbooks would, however, be unaffected by local price levels.

The concept of equalization has been widely adopted, both both by scholars and legislators, as an important component of intergovernmental fiscal relations. The degree of equalization in a grant-in-aid is determined by the mathematical function incorporated into the allotment formula. The current practice of constraining allotment ratios to attain a desired degree of equalization, as in the case of the Vocational Education Act of 1963, is less rational than selecting appropriate parameter values. Effectuating the desired degree of equalization presupposes correct measures of relative state fiscal capacity. Our own preference would be for some measure of median income. We have demonstrated the implications of choice with respect to mathematical functions and measures of fiscal capacity by computing shares for all states for various alternatives in the context of the Vocational Education Act of 1963. Since matching ratios which are the same for all states pervert equalization they should vary directly with relative fiscal capacity. The degree of equalization desired in the vocational education program remains a political decision. The 1963 Act should be examined to assure that this desired degree of equalization is realized in an effective manner.

Projected State Shares, 1970 and 1975

As state shares of population and personal income change over time, the share of the total federal appropriation received by any one state will change. If the total federal appropriation remains constant, as authorized by the 1963 Act for fiscal years beginning in 1967, some states will experience absolute gains in federal funds while others will experience absolute losses. State shares are likely to change over time because rates of population growth in the three relevant age groups and the rate of increase in PCPI will not be the same for all states. With the aid of a computer program simulating the allotment formula and with state population and PCPI projections from the National Planning Association,* the state shares of the federal allotment for the years 1970 and 1975 have been projected. The actual state shares for 1966 and the projected state shares for 1970 and 1975 are given in Table 3.3.5. These shares are independent of the size of the federal allotment.

Although allotments to the states are not based on total state population, there is a positive relationship between changes in state shares and changes in state total population relative to national aggregate population, as changes in total population and in each of the three age groups usually move together. Of the 26 states whose projected shares decrease between 1966 and 1975, twenty-four have projected relative decreases in their total population. Of the 23 states whose projected shares increase between 1966 and 1975, fifteen have projected relative increases in their total population.

The relationship between changes in shares and changes in relative PCPI tends to be negative. Of the 26 states which have projected share decreases, 21 have projected relative increases in PCPI. Of the 23 states which have projected share increases, 15 have projected relative decreases in PCPI. The negative relationship between population growth and PCPI growth was pointed out in a recent issue of the Survey of Current Business.** The projections indicate

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*State Projections to 1975: A Quantitave Analysis of Economic and Demographic Changes, Regional Economic Projection Series, Report Number 65-II. National Planning Association, October,1965. Separate projections were made for the four outlying areas.

**"In the Plains, where both population growth and income expansion have been below average, per capita incomes have risen one-sixth more than the national average from 1929 and 1963. Conversely, in the Far West, where population and aggregate income have surged ahead, average incomes have fallen short of the national pace by one-seventh." Survey of Current Business, Volume 25, Number 4, Office of Business Economics, Department of Commerce, April 1965, pp. 16-17.

TABLE 3.3.5

ACTUAL AND PROJECTED STATE SHARES OF FEDERAL AID UNDER THE VOCATIONAL EDUCATION ACT OF 1963 FOR FISCAL YEARS 1966, 1970, and 1975

State or Area	Shares			Percent Change	
	Actual 1966	Projected 1970	Projected 1975	1966-1975	1970-1975
U.S. Totals	90.00	90.00	90.00	.0	.0
Alabama	2.08	1.87	1.73	-16.8	- 7.5
Alaska	.10	.11	.11	10.0	.0
Arizona	.82	.87	.90	1.1	3.4
Arkansas	1.16	.99	.90	-22.4	- 9.1
California	6.62	6.91	7.24	9.4	4.8
Colorado	.88	.91	.93	5.6	2.2
Connecticut	.98	1.00	1.04	6.1	4.0
Delaware	.17	.19	.21	23.5	10.5
Dist.of Columbia	.25	.28	.31	24.0	10.7
Florida	2.82	2.97	3.09	9.6	4.0
Georgia	2.62	2.40	2.32	-11.5	- 3.3
Hawaii	.38	.33	.38	.0	15.2
Idaho	.40	.35	.32	-20.0	- 8.6
Illinois	3.65	4.11	4.33	18.6	5.4
Indiana	2.20	2.34	2.34	6.4	.0
Iowa	1.32	1.35	1.28	- 3.0	- 5.2
Kansas	1.07	1.07	1.03	- 3.7	- 3.7
Kentucky	1.89	1.71	1.60	-15.3	- 6.4
Louisiana	2.03	1.99	1.96	- 3.4	- 1.5
Maine	.54	.50	.48	-11.1	- 4.0
Maryland	1.41	1.56	1.65	17.0	5.8
Massachusetts	1.95	2.20	2.33	19.5	5.9
Michigan	3.62	3.78	3.82	5.5	1.1
Minnesota	1.66	1.85	1.87	12.6	1.1
Mississippi	1.42	1.25	1.16	-18.3	- 7.2
Missouri	1.94	1.94	1.93	- .5	- .5
Montana	.36	.33	.32	-11.1	- 3.0
Nebraska	.68	.68	.69	1.5	1.5
Nevada	.15	.15	.18	20.0	20.0
New Hampshire	.31	.29	.29	- 6.5	.0
New Jersey	2.35	2.57	2.71	15.3	5.5
New Mexico	.59	.63	.62	5.1	- 1.6
New York	6.18	6.10	6.37	3.1	4.4
North Caroline	3.05	2.79	2.63	-13.8	- 5.7
North Dakota	.37	.32	.31	-16.2	- 3.1
Ohio	4.46	4.62	4.64	4.0	.4
Oklahoma	1.40	1.23	1.15	-17.9	- 6.5
Oregon	.86	.90	.86	.0	- 4.5
Pennsylvania	5.09	5.17	5.06	- .6	- 2.1
Rhode Island	.41	.43	.46	12.2	7.0

TABLE 3.3.5 continued

State or Area	Shares Actual 1966	Projected 1970	Projected 1975	Percent Change 1966-1975	1970-1975
South Carolina	1.64	1.46	1.35	-17.7	- 7.5
South Dakota	.38	.35	.33	-13.2	- 5.7
Tennessee	2.25	2.07	1.97	-12.4	- 4.8
Texas	5.66	5.69	5.65	- .2	- .7
Utah	.53	.55	.57	7.5	3.6
Vermont	.21	.20	.19	- 9.5	- 5.0
Virginia	2.56	2.24	2.24	-12.5	.0
Washington	1.36	1.37	1.36	.0	- .7
West Virginia	1.10	.96	.80	-27.3	-16.7
Wisconsin	1.88	2.03	1.98	5.3	- 2.5
Wyoming	.15	.15	.15	.0	.0
Guam	.04	.03	.03	-25.0	.0
Puerto Rico	1.69	1.53	1.52	-10.1	- .7
Virgin Islands	.02	.02	.02	.0	.0
American Samoa	.01	.01	.01	.0	.0

SOURCE: Actual 1966 shares calculated from data published in American Education, Office of Education, Department of Health, Education and Welfare, March 1966, p. 29. Projected shares based on data published in State Projections to 1975: A Quantitative Analysis of Economic and Demographic Changes, Regional Economic Projection Series, Report Number 65-II. National Planning Association, October 1965. Separate projections were made for the four outlying areas.

that the states which are relatively poor now will receive smaller shares in the future. Most of the states with decreasing shares are in the South and West North Central regions.

The allotment formula is more sensitive to population changes than to PCPI changes. One reason for this is the constraint imposed on the allotment ratio by the .6 and .4 limits. In 1966, twelve relatively poor states and eight relatively rich states were outside the constraint limits. That is, small changes in these states' relative PCPI would not affect their allotments. For example, if national PCPI remained fixed, Mississippi's PCPI could increase by as much as 45 percent or decrease by any amount and its share would remain unaffected.

In order that no state receive absolutely less in federal aid, the federal appropriation would have to increase by about 2.7 percent per year. At this rate of increase West Virginia, the state currently projected to suffer the greatest relative loss, would be assured a constant level of federal support West Virginia, though, is projected to have absolutely fewer people in two of the three age categories and an absolute decrease in total population. Alternatively, the rate of increase of federal appropriations could be calculated such that the state (Oklahoma) which suffers the largest relative decline in shares, even though population is projected to increase in all three age groups, receives a constant absolute amount. An increase of approximately 1.8 percent per year would be required in this case. If the federal appropriation grows along with the weighted growth of the population in the three age groups, then an annual growth in the federal appropriation of 1.6 percent would be necessary.

During June, July, and August of 1966 the House General Subcommittee on Education and Labor held hearings on identical bills H.R. 15444 and H.R. 15445. These bills propose amendments to the V.E. Act. One amendment would raise the total authorized federal support level in fiscal 1968 to $400 million annually. If this increase is approved by Congress, then a significant once-over increase in federal support would be experienced by each state. The projected changes in state shares between 1970 and 1975 will still indicate which states will gain and which states will lose federal aid.

As long as federal aid to vocational education takes the traditional form of a fixed appropriation, those responsible for these programs at the state and local levels will have to plan in the context of changing amounts of federal aid as each state's share of the total appropriation changes over time.

3.4 Initial Response to the Vocational Education Act of 1963

The initial fiscal response to the Vocational Education Act of 1963 is depicted by the aggregate data shown in Appendix Figure II. Over $100 million in federal funds was expended for the six purposes specified in the 1963 Act. An added $197 million in state and local government funds were reported as spent for these purposes. (These two sums are in addition to $54 million federal and $251 million state-local expenditures under the Smith-Hughes and George-Barden Acts.) The entire $197 million spent by states and localities should not be interpreted as additional spending stimulated by the 1963 Act. Reported state-local expenditures under the Smith-Hughes and George-Barden Acts declined by $27 million in 1965; this was the first year-to-year decline in the postwar period. Presumably these funds were used to match federal allotments under the new act. In addition the total should be offset by the normal increase in state-local spending under the Smith-Hughes and George-Barden Acts; that increase was $23 million in 1964 and $22 million in 1963. The $197 million figure also includes $42 million in state-local expenditures for office occupations, a type of vocational education long supported by states and localities but eligible for federal aid for the first time in 1965. Another $65 million represents state-local matching funds for construction, some of which would have been spent despite the availability of federal support. Thus the amount of state-local expenditures stimulated by the first-year allotments under the 1963 Act was probably less than the federal funds spent.

Enrollments might be used to measure response, but as mentioned in the previous chapter, reported enrollment data cannot be used for analytical purposes. Yet it is interesting to note that of the 864,221 increase in total enrollment between 1964 and 1965, 730,904 was in office occupations. The difference of 133,817 in considerably less than the reported growth in enrollment of 349,202 between 1963 and 1964. To better interpret the initial response to the Vocational Education Act of 1963, data for individual states must be examined.

State Response

The officials responsible for vocational education in each state were required to make a series of decisions in response to the allotment of additional federal funds which each state received for the first time in fiscal 1965. Some fiscal results of these decisions are summarized in Tables 3.4.1 and 3.4.2. The first of these lists the basic allotment received by each state under Section 4 of the 1963 Act. Seven states released some or all of their allotments to be reallotted to other states by OE. Seventeen states received reallotments and $35,000 of the released funds were not reallotted and reverted to the U.S. Treasury. Several states transferred Smith-Hughes and/or George-Barden funds to be added to their 1963 Act allotments. In Connecticut, for example, all Smith-Hughes and George-Barden allotments, with the exception of George-Barden funds for home economics, were transferred. The fourth column in Table 3.4.1 lists the final amount of federal funds available in each state to be used for the purposes set forth in the Vocational Education Act of 1963. Five states- Montana, Wyoming, Guam, Virgin Islands, and American Samoa - made no expenditures of 1963 Act funds as indicated in column five. In the sixth column the ratios of expenditures to total funds available are listed. More than half the states spent the entire amount of federal funds available to them. Funds available but not spent in the remaining states reverted to the Treasury; this amounted to 7.6 percent of the total available to all states. In only one instance, New Hampshire, did a state receive a reallotment of 1963 Act funds and then not spend the full amount of federal funds available.

The transfer provision of the 1963 Vocational Education Act enabled states to shift Smith-Hughes and George-Barden allotments from one specific program area to another as well as to the 1963 Act. Though all the transfers of Smith-Hughes allotments were to the 1963 Act, a total of $209,859 of George-Barden allotments was transferred between program areas. Given the new transfer provision the only reason for a state to release allotments is its inability to match the federal funds. The amount of Smith-Hughes and George-Barden allotments released by states in 1965 was $.5 million, whereas $1.8 million was released in 1964. One would expect an even further decline in the amount of Smith-Hughes and George-Barden funds released in the future as states adjust their administrative practices to the transfer provision of the 1963 Act. Some states released funds in one program area and received reallotted funds in another. For example, California released all of its $29,448 fishery allotment and received George-Barden Titles II and III reallotments plus a reallotment of 1963 Act funds; South Carolina released more George-Barden Title II funds ($29,000) than it received in Title III reallotments ($18,053). Neither California nor South Carolina was among the seventeen states which took advantage of the transfer provision in 1965.

The total expenditures of federal funds listed for each

TABLE 3.4.1

BASIC ALLOTMENTS, REALLOTMENTS, TRANSFERS, AND EXPENDITURES OF SECTION 4 FUNDS OF THE 1963 VOCATIONAL EDUCATION ACT, BY STATE, 1965

(in thousands of dollars)

	(1) Section 4 Basic Allotment	(2) Re-allotment (+ or -)	(3) Transfer from Smith-Hughes & George-Barden	(4) Total Section 4 Funds Available	(5) Section 4 Funds Spent	(6) (5)/(4) Percent
U.S.	106,650	-35	1,984	108,599	100,309	92.4
Ala.	2,468			2,468	2,129	86.3
Alaska	127			127	4	3.1
Ariz.	977			977	803	82.2
Ark.	1,382	-309		1,073	940	87.6
Calif.	7,773	+320		8,093	8,093	100.0
Colo.	1,061			1,061	926	87.3
Conn.	1,155	+48	474	1,677	1,676	100.0
Del.	208			208	14	6.7
D.C.	314			314	308	98.1
Fla.	3,346			3,346	2,514	75.1
Ga.	3,117		3	3,120	3,120	100.0
H.I.	442			442	438	99.1
Idaho	485	+20		505	505	100.0
Ill.	4,340			4,340	3,024	69.7
Ind.	2,639			2,639	2,639	100.0
Iowa	1,592		16	1,608	981	61.0
Kansas	1,293			1,293	1,265	97.8
Ky.	2,255	+93	254	2,602	2,601	100.0
La.	2,395			2,395	1,261	52.7
Maine	659			659	184	27.9
Md.	1,688		97	1,785	1,665	93.3
Mass.	2,377			2,377	2,377	100.0
Mich.	4,234			4,234	4,233	100.0
Minn.	1,975	+81	50	2,106	2,106	100.0
Miss.	1,719	+71		1,790	1,790	100.0
Mo.	2,326			2,326	1,217	52.3
Mont.	486	-405		81	0	0
Neb.	831			831	566	68.1
Nev.	178	+7		185	186	100.0
N.H.	381	+16	146	543	406	74.8
N.J.	2,784	+115	8	2,907	2,906	100.0
N.M.	695	+29		724	723	100.0
N.Y.	7,400	+305		7,705	7,705	100.0
N.C.	3,646	+2		3,648	3,648	100.0
N.D.	450			450	450	100.0

Table 3.4.1 continued

	(1) Section 4 Basic Allotment	(2) Re-allotment (+ or -)	(3) Transfer from Smith-Hughes & George-Barden	(4) Total Section 4 Funds Available	(5) Section 4 Funds Spent	(6) (5)/(4) Percent
Ohio	5,186	+214		5,400	5,399	100.0
Okla.	1,676	+69		1,745	1,744	100.0
Ore.	1,043		235	1,278	1,278	100.0
Pa.	6,054			6,054	6,054	100.0
R.I.	495	+20	79	594	594	100.0
S.C.	1,972			1,972	1,972	100.0
S.D.	458			458	330	72.1
Tenn.	2,690		121	2,811	2,728	97.0
Texas	6,726			6,726	6,357	94.5
Utah	652	+27		679	679	100.0
Vt.	264			264	176	66.7
Va.	3,034	-400		2,634	2,241	85.1
Wash.	1,613			1,613	1,613	100.0
W. Va.	1,305	-217		1,088	1,088	100.0
Wis.	2,245	+92	1	2,338	2,338	100.0
Wyo.	197	-197		0	0	-
Guam	48			48	0	0
P.R.	1,807		500	2,307	2,307	100.0
V.I.	22	-22		0	0	-
Amer. Samoa	14	-14		0	-	-

SOURCE: Based on state reports for fiscal 1965. Preliminary data provided by the Division of Vocational and Technical Education, U.S. Office of Education.

TABLE 3.4.2 - DISTRIBUTION OF 1963 ACT EXPENDITURES, BY PURPOSE, 1965. (Percentages)

	Secondary	Post-Secondary	Adult	Students with Special Needs	Ancillary	Construction
U.S.	32.3	13.4	6.1	.3	5.2	42.6
Ala.	2.9	0	0	0	.1	96.5
Alaska	12.7	82.7	0	0	3.2	0
Ariz.	44.4	47.8	1.8	.1	4.9	0
Ark.	1.2	3.2	.6	.4	4.6	90.7
Calif.	46.0	19.3	7.9	1.1	6.6	18.9
Colo.	40.1	19.1	2.2	1.8	3.7	32.9
Conn.	49.4	33.4	1.9	.1	14.2	0
Del.	100.0	0	0	0	0	0
D.C.	34.1	18.7	0	1.2	26.6	15.9
Fla.	47.5	32.7	14.0	.8	3.5	2.0
Ga.	8.7	1.9	45.1	.0	.9	42.0
Hawaii	42.3	31.2	0	0	2.9	22.8
Idaho	49.5	40.2	2.8	0	3.5	3.9
Ill.	76.5	1.3	7.3	2.0	12.6	0
Ind.	12.0	0	1.0	0	0	86.7
Iowa	44.0	37.5	13.8	0	5.6	0
Kansas	26.1	7.2	0	0	11.2	55.5
Ky.	24.2	0	17.1	0	4.0	54.7
La.	0	39.0	52.4	0	7.4	0
Maine	20.1	79.9	0	0	0	0
Md.	20.9	.5	1.2	a	2.6	74.9
Mass.	48.8	2.4	5.5	.3	2.6	29.8
Mich.	40.7	14.6	0	0	5.0	37.3
Minn.	6.4	15.4	3.4	.4	12.6	60.8
Miss.	38.9	21.1	2.6	0	7.7	29.5
Mo.	59.4	5.3	1.8	.2	3.1	29.8
Neb.	18.0	2.5	3.2	0	3.0	73.0
Nev.	24.2	7.5	a	a	3.8	63.9
N.H.	6.2	1.5	0	0	3.7	88.7
N.J.	42.8	.1	6.3	.1	6.3	42.1
N.M.	39.7	5.1	2.0	.9	12.0	39.7
N.Y.	62.0	34.6	.3	0	3.1	0
N.C.	60.8	2.3	.2	.1	3.5	33.3
N.D.	6.7	19.6	2.4	0	2.0	69.1
Ohio	11.0	.9	2.5	.2	1.5	83.9
Okla.	36.1	5.0	1.2	0	6.1	50.8
Ore.	22.1	24.1	1.5	0	10.7	41.5
Pa.	32.0	2.0	a	0	4.8	61.2
R.I.	0	0	0	0	3.0	97.0
S.C.	20.8	0	33.1	0	4.8	41.3
S.D.	2.4	6.7	0	0	0	90.9
Tenn.	13.7	33.5	1.5	0	4.4	46.7
Texas	3.5	1.4	.8	1.0	1.7	91.6
Utah	18.7	20.9	2.7	0	18.4	39.0
Vt.	22.7	5.6	.6	0	6.8	64.8
Va.	55.6	21.1	4.3	0	3.2	15.9
Wash.	18.2	33.4	20.9	0	27.5	0
W. Va.	18.2	2.9	0	.1	.7	80.0
Wis.	10.3	38.9	5.1	0	8.2	37.5
P.R.	27.3	9.1	.9	.5	3.1	59.2

[a] Less than 0.05 but not zero.

SOURCE: Based on state reports for fiscal 1965. Preliminary data provided by the Division of Vocational and Technical Education, U.S. Office of Education.

state in column five of Table 3.4.1 were distributed among the six purposes specified in the 1963 Act. This distribution, in percentage terms, is listed in Table 3.4.2. The distribution by purpose for the U.S. cannot be interpreted as a reflection of the distribution for a typical state. Even though 43 percent of the federal 1963 Act funds spent by all the states went for construction, ten states had no expenditure for this purpose and five states used more than 90 percent of the new federal aid for construction. All the states appear to have met the requirement of the act that at least one-third of each state's allotment be used only for construction and/or post-secondary vocational education. In the case of Illinois, 1.3 percent of expended federal funds went for post-secondary and none for construction, and the requirement of the act was not met because 68.8 percent of Illinois' allotment was spent on the other four purposes. The 30.3 percent of Illinois' allotment which was neither spent nor released for reallotment reverted to the U.S. Treasury. The 1963 Act also requires states to spend three percent of their allotments only for ancillary services. Six states expended their entire federal allotments but did not meet this requirement. Presumably they took advantage of the provision in the act that the U.S. Commissioner of Education "may, upon the request of a State, permit such State to use a smaller percentage of its allotment for any year for [this purpose] if he determines that such smaller percentage will adequately meet such [purpose] in such State."*

The expenditure of federal funds can also be classified by program and by function as in Table 3.4.3. The largest portion of 1963 Act expenditures (excluding construction) was devoted to trades and industry. The second largest portion was used for training in office occupations, a program area not previously eligible for federal support. The third largest portion was devoted to technical education. In general, those states which had developed strong programs in technical education since the inception of Title III of the George-Barden Act in 1959 (see section 2.5) spent a substantial part of their 1963 Act allotments on this program. Those states which had weak programs spent little if any of their 1963 Act money on technical education and in some cases transferred their Title III funds to other allotment categories.

The breakdown of federal expenditures by function is given in Table 3.4.3 for all three federal acts combined; these data are not available for each separate act. About a quarter of all federal funds were used to buy instructional

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*See page B-4 in Appendix B.

TABLE 3.4.3

EXPENDITURE OF FEDERAL FUNDS FOR VOCATIONAL EDUCATION BY PROGRAM AREA AND BY FUNCTION, 1965

	SMITH-HUGHES		GEORGE-BARDEN		V.E. ACT OF 1963 (excluding construction)	
PROGRAM AREA	Amount ($1,000)	Percent	Amount ($1,000)	Percent	Amount ($1,000)	Percent
Agriculture	3,361	47.2	10,021	21.5	7,041	13.1
Distributive Occupations	a	--	2,535	5.4	2,060	3.8
Health Occupations	a	--	4,577	9.8	773	1.4
Home Economics	715	10.0	8,272	17.7	783	1.5
Office Occupations	a	--	a	--	12,120	22.6
Technical	a	--	13,035	27.9	7,993	14.9
Trades and Industry	3,051	42.8	8,199	17.6	22,773	42.5
Fisheries	a	--	61	.1	16	b
TOTAL	7,127[c]	100.0[d]	46,700[c]	100.0[d]	53,559[c]	100.0[d]

	Smith-Hughes, George-Barden, & V.E. Act of 1963	
FUNCTION	Amount ($1,000)	Percent
Administration	1,998	1.3
Supervision	8,103	5.4
Teacher Education	3,181	2.1
Instruction	49,381	32.8
Research	882	.6
Instructional Equipment	35,598	23.6
Vocational Guidance	1,294	.9
Other Allowable Items	7,610	5.0
Construction	42,730[c]	28.3
TOTAL[d]	150,777	100.0[d]

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[a] No allotment

[b] Less than .05.

[c] The four numbers designated by the superscript "c" do not add to $150,777,000 because some states listed expenditure by function that were not broken down by program area.

[d] Totals may not add to 100.0 because of rounding.

SOURCE: Based on state reports for fiscal 1965. Preliminary data provided by the Division of Vocational and Technical Education, U.S. Office of Education.

equipment. In addition to this expenditure of $36 million, another $22 million of state-local spending for instructional equipment was reported. This is in sharp contrast to the $12 million combined federal and state-local spending for this function reported in each of the two previous years.

Matching Ratios

The fiscal response in each state to the 1963 Act can also be examined in terms of matching ratios, the ratios of state-local expenditures to federal expenditures. These ratios are listed in the first column of Table 3.4.4. To satisfy the matching requirement in the legislation, all these ratios must be at least 1.00. Two adjustments to these ratios were made. Account was first taken of the 1965 reduction in state-local expenditures declared as matching funds for the Smith-Hughes and George-Barden allotments. Such reductions took place in a majority of the states. Secondly, the ratios were adjusted for reported state-local spending for office occupations on the assumption that this represented a continuation of support for long-standing programs. Again such adjustments were made for a majority of the states. For example, New York reported $20.6 million of state-local expenditures for office occupations. This was in "response" to $1.0 million expenditure of federal funds, practically all of which was spent on instructional equipment. When both adjustments were made, 23 states had ratios of less than 1.00. In Illinois and Washington, the adjusted ratio is negative indicating that reported matching funds for the 1963 Act were more than offset by reductions in state-local espenditures matching Smith-Hughes and George-Barden allotments and state-local expenditures for office occupations.

Response in Four Selected States

The fiscal response to the 1963 Act allotments in the four selected states shows wide diversity in terms of the quantity and type of state-local expenditures made. As indicated in Table 3.4.1, Virginia and West Virginia released part of their 1963 Act funds and Maryland transferred part of its George-Barden funds to the 1963 Act (all of its fishery funds, most Title II funds, and a portion of its Title III funds). Pennsylvania and West Virginia spent all of their 1963 Act funds, but Maryland spent 93.3 percent and Virginia spent only 85.1 percent of their available federal funds. State-local matching of federal expenditures ranged from 1.00 in West Virginia to 2.57 in Maryland, as shown in Table 3.4.2.

TABLE 3.4.4

RATIO OF REPORTED STATE-LOCAL EXPENDITURES TO FEDERAL EXPENDITURES FOR 1963 ACT PURPOSES AND ADJUSTMENTS FOR REDUCTIONS IN REPORTED STATE-LOCAL SMITH-HUGHES AND GEORGE-BARDEN EXPENDITURES AND FOR OFFICE OCCUPATIONS EXPENDITURES, BY STATE, 1965

	(1)	(2)	(3)	(4)
	Ratio of State-Local Expenditures to Federal Expenditures	Adjustment in Ratio Due To Reduction in Smith-Hughes& George-Barden Expenditures	Office Occupation Expenditures	Adjusted Ratio (1)-(2)-(3)
U.S.	1.96	.27	.41	1.28
Ala.	1.00			1.00
Alaska	1.00			1.00
Ariz.	1.15	.32	.10	.73
Ark.	1.04	.03		1.01
Calif.	2.04	.64		1.40
Colo.	1.31	.41	.23	.67
Conn.	3.51	1.96		1.55
Del.	1.00			1.00
D.C.	1.08	.46	.08	.54
Fla.	1.69	.70	.58	.41
Ga.	1.24		.17	1.07
Hawaii	1.40	.34	.75	.31
Idaho	1.32	1.05	.09	.18
Ill.	1.50	1.45	.50	-.45
Ind.	1.00			1.00
Iowa	1.14	.52	.12	.50
Kan.	1.21		.16	1.05
Ky.	1.03	.04	.21	.78
La.	1.08		.23	.85
Maine	1.04			1.04
Md.	2.57		.10	2.47
Mass.	3.67	2.75		.92
Mich.	1.00		.18	.82
Minn.	3.25		.14	3.11
Miss.	1.44	.21		1.23
Mo.	1.02		.31	.71
Neb.	1.00			1.00
Nev.	1.10		.09	1.01
N.H.	3.58	.35		3.23
N.J.	2.14	.76	.53	.85
N.M.	1.60	.21	.48	.91
N.Y.	5.46	.80	2.66	2.00
N.C.	2.81	1.40		1.41
N.D.	1.13	.20	.10	.83

Table 3.4.4 - Continued

	(1) Ratio of State-Local Expenditures to Federal Expenditures	Adjustment in Ratio Due To: (2) Reduction in Smith-Hughes& George-Barden Expenditures	(3) Office Occupation Expenditures	(4) Adjusted Ratio (1)-(2)-(3)
Ohio	1.07		.10	.97
Okla.	1.10	.16	.02	.92
Ore.	1.50	.23	.39	.88
Pa.	2.04		.21	1.83
R.I.	1.39			1.39
S.C.	1.39	.57	.21	.51
S.D.	1.00			1.00
Tenn.	1.36	.11	.14	1.11
Texas	1.07			1.07
Utah	3.94	.62	.32	3.00
Vt.	1.09		.05	1.04
Va.	1.15	.29	.56	.30
Wash.	1.41	1.28	.36	-.23
W.Va.	1.00		.09	.91
Wis.	2.82	.34	.49	1.99
P.R.	1.42		.12	1.30

SOURCE: Based on state reports for fiscal 1965. Preliminary data provided by the Division of Vocational and Technical Education, U.S. Office of Education.

Virginia was the only one of the four states to reduce state-local Smith-Hughes and George-Barden expenditures below 1964 levels. Office occupation expenditures were a large part of the 1965 increase in state-local spending in Virginia, but only a small part of the increase in the other three states. Maryland spent 74.9 percent and West Virginia 80.0 percent of their 1963 Act federal funds on construction, whereas Virginia spent only 15.9 percent on construction. In Maryland state expenditures were twice those of localities for matching purposes, but in West Virginia the state spent less than one percent of what the localities spent. These variations in state fiscal response to the federal allotments under the 1963 Act are linked to state differences with respect to organization, administration financial resources, and institutions. In order to develop the following picture of first-year response to the 1963 Act, interviews with state officials in the four selected states supplemented information contained in the reports submitted to the U.S. Office of Education.

Maryland has embarked on a construction program which is eventually intended to provide area vocational education centers within commuting distance of every student and adult in the state (i.e., within 15 miles of any existing high school). The passage of the 1963 Act was instrumental in the approval of a $10 million bond issue by the Maryland General Assembly.

Pennsylvania also has a very ambitious area school program underway, a program which antedates the 1963 Act. The Pennsylvania Legislature authorized, in 1963, an annual state appropriation of $10 million to be used for reimbursing local expenditures for the construction of area vocational technical schools and technical institutes. In 1965, an amendment to the act raised this annual appropriation to $20 million. Part of the reason behind this state action and the 1963 act reorganizing school districts was the desire to reduce the number of school districts from over 2000 to about one-fourth that number. The state law supporting construction of area schools requires that school districts be combined into attendance areas which are large enough to support an area vocational technical school. Every school district is assigned to an attendance area which in turn decides whether or not it wants to establish an area school. Contrary to most states where the local area pays the largest portion of construction costs, the state of Pennsylvania promises to pay no less than fifty percent of the construction costs for area schools. The local areas are only obliged to pay for at least ten percent of the cost; thus the federal share would be forty percent at most. New teachers in these area schools are paid by the state for the first three years that they teach. This is obviously a tremendous incentive for school districts within attendance areas to establish area schools. In addition to other reimbursements, Pennsylvania uses state and federal funds to pay local education agencies $75 per student in the area schools. This is over and above the per student payments made in [illegible]-distributive occupations ($50), industrial and agricultural education ($35), and home economics ($20).

The per student payments made by Pennsylvania are a form of state program support different from that of the other three states. Maryland, Virginia, and West Virginia allot funds to reimburse a portion of local expenditures. In Pennsylvania the support level varies in proportion to enrollment, whereas in the other three states, given an aggregate level of support for program operating costs a formula simply distributes that support among the localities in proportion to their expenditures. These are the two basic ways by which states allot funds to localities for program support. The change in emphasis away from program areas brought about by the 1963 Act has forced the adoption of new techniques for allotting funds to localities. In many cases construction funds are allotted on a project-by-project basis.

In Virginia the 1963 Act encouraged some large school districts to start the construction of vocational education centers that were already on the planning boards and just waiting for financial support. In Virginia the emphasis is on a community college system that will number 25 institutions and be dispersed throughout the state such that about 90 percent of the state's population will be within 30 minutes commuting distance of one of these colleges.

The West Virginia legislature appropriates state matching funds for the 1963 Act and earlier vocational education acts separately. The majority of West Virginia's state funds for education are derived from earmarked sales and cigarette taxes. (Nearly all of the state funds in the other three states come from general appropriations.) In West Virginia the state constitution forbids counties from forming jointures. This impedes the formation of sensible cooperative vocational education arrangements. The state has no comprehensive plan for providing area schools throughout the state and since the counties must do all the matching on construction expenditures, there is little incentive for area schools to be developed.

This cursory review of the initial response in Maryland, Pennsylvania, Virginia, and West Virginia is merely illustrative of the variety in institutional and fiscal arrangements at the state and local levels. These arrangements are likely to change over the next several years as a full adjustment is made to the Vocational Education Act of 1963 and as the total federal appropriation under this Act is increased to its permanent authorization level. The most important of these fiscal arrangements is the manner in which federal and state funds are distributed by the states among localities and among the purposes set forth in the Act. A complete evaluation of the extent to which the 1963 Act meets the educational needs which prompted its passage would require a detailed analysis of these fiscal arrangements in each state.

CHAPTER IV

CONCLUSIONS AND RECOMMENDATIONS

Grants-in-aid, like the fifty year old vocational education program, are a technique by which the federal government entices and induces states and localities to pattern their expenditures in line with national objectives. The details of this technique and its effects on state and local government expenditures are a part of what has come to be called intergovernmental fiscal relations. These relations have provided the focus for this study of vocational education over the postwar period. The conclusions briefly set forth in this final chapter are organized as answers to two questions. A list of recommendations is then presented.

Can the Procedures Used to Allot Federal Vocational Education Funds Among the States Be Improved?

Despite the improvements introduced by the Vocational Education Act of 1963, significant changes in allotment procedures can be made which would better meet national educational objectives. Whatever the aggregate amount of federal funds appropriated in an attempt to achieve these objectives,* that sum must be allotted among the states. The basic principle underlying the allotment process is to distribute a federal appropriation among the states on the basis of the potential demand for vocational education. Since the introduction of the Smith-Hughes Act, population data have been used to measure potential demand. Two major weaknesses of the allotment procedures used under the Smith-Hughes and George-Barden Acts were identified in this study -- the adjustment of allotments only after every decennial census and the allotment of funds for health and technical occupations on a basis quite inappropriate to the relative potential demand among the states for these types of education. A desirable measure of fiscal flexibility was introduced, however, by the reallotment provision for George-

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*This study has not been concerned with the question of determining the appropriate amount of federal funds which should be devoted to vocational education but has been restricted to an analysis of the intergovernmental fiscal relations resulting from this grant-in-aid program regardless of the aggregate amount of federal support.

Barden funds initiated in 1957.

With the passage of the Vocational Education Act of 1963 Congress wisely shifted the basis of the allotment procedure away from attempts to measure the relative potential demand in each state for vocational education in particular program areas to an attempt to measure the relative potential demand in each state for the vocational education of particular segments of the population. As indicated in section 3.3 however, using total population in the three age categories, 15-19, 20-24, and 25-65 year olds, is not the best available measure of the number of potential vocational education students in each state, as these data include military personnel and students enrolled in non-public institutions and four-year colleges and universities. Even though the Smith-Hughes and George-Barden Acts were not repealed by the 1963 Act, an additional measure of fiscal flexibility was introduced by the transfer provision whereby states can shift specific allotments under one act to other allotment categories. Several states took advantage of this provision in 1965.

A major innovation of the 1963 Act was the inclusion of an equalization provision in the allotment procedures. This provision of the Act was analyzed in detail in section 3.3; only about six percent of the 1966 appropriation was in effect shifted from rich to poor states by applying the equalization provision. As indicated in that section, the particular mathematical form of the formula used in the equalization provision could be improved so as to better reflect the intent of Congress. It was also argued that per capita personal income is a misleading measure of state fiscal capacity to use in such equalization formulas. In addition, matching ratios could be adjusted so that states which receive larger federal allotments because of their relatively low fiscal capacity would not be required to spend larger amounts of state-local funds.

Has Federal Aid Stimulated State-Local Expenditures for Vocational Education?

Grant-in-aid programs are usually intended to stimulate state-local spending for a particular purpose. The relationship between the availability of federal funds for vocational education and reported state-local expenditures was analyzed in a variety of ways both over the 1947-64 period, when all federal funds were allotted under the Smith-Hughes and George-Barden Acts, and in 1965, the first year for which funds under the Vocational Education Act of 1963 were available. The study of the 1947-64 period indicated that no significant relationship existed between changes in federal expenditures for vocational education and changes in state-local expenditures. The latter exhibited the tendency to grow over time even in years when the amount of federal aid either declined or was constant. In the two years studied when state-by-state allotments were adjusted in line with new census data there was no perceptable pattern of response in state-local spending as federal allotments increased in some states and declined in others. A detailed study of the response to federal aid for technical education, between the inauguration of that program in 1959 and 1964, did show that several states were stimulated to develop new technical education programs. Some states were in a good position to match federal funds as they already had such programs and other states did not respond to any significant extent.

During fiscal 1965, the first allotments to the states of 1963 Act funds ($107 million) were made, and $100 million in federal expenditures were reported by the states. The states also reported $197 million of state-local expenditures for matching purposes. Not all of this amount should be considered as induced by the 1963 Act. The usual increase in state-local spending under the Smith-Hughes and George-Barden Acts did not take place in 1965 and, furthermore, a significant decrease was reported. In addition, state-local expenditures for education in office occupations and for construction were declared as matching funds for the first time. The total amount of new state-local spending for vocational education was probably less than the amount of the federal appropriation as states shifted matching funds from the Smith-Hughes and George-Barden Acts to the 1963 Act and as they reported traditional expenditures for the first time. The most significant aspect of the initial response to the 1963 Act was the large amount of funds devoted to instructional equipment and the construction of area vocational schools.

Recommendations

1. All federal aid for vocational education should be consolidated under the Vocational Education Act of 1963.

> The ten separate allotments under the Smith-Hughes and George-Barden Acts create an unnecessary administrative burden on federal, state, and local officials. The allotment procedures of these acts are rigid and, in some cases, inappropriate. The transfer provision included in the 1963 Act now enables states to ignore the purposes for which these funds were originally intended.

The aggregate amount of these appropriations should be added to the allotments under the 1963 Act. The only purpose for which some Smith-Hughes and George-Barden funds can be used which is not permissible under the 1963 Act is support of non-wage oriented home economics. If Congress deems continued federal support of this type of education to be essential to the achievement of national educational objectives, states could be permitted to use a certain portion of their allotments under the 1963 Act for this purpose. If, as recommended, Smith-Hughes and George-Barden allotments for specific program areas are dropped, all federal expenditures would have to be matched in terms of the six purposes set forth in the 1963 Act.

2. If the Smith-Hughes Act and Title I of the George-Barden Act are retained, state allotments should be based on annual estimates of the specific population data now used decennially.

3. If Titles II and III of the George-Barden Act (health occupations and technical education) are retained, federal appropriations for these program areas should be allotted among the states on the basis of annual state shares of total population and employment in manufacturing, respectively.

4. The population estimates used in the 1963 Act allotment formula should be adjusted to better reflect the potential number of vocational education students in each state by adjusting for military personnel and students enrolled in non-public institutions and four-year colleges and universities.

5. The allotment ratios used to accomplish equalization in the 1963 Act allotment formula should be unconstrained.

This would better reflect state differences though it would only increase the amount of equalization from about six to about seven percent of the total amount allotted among the states. The four outlying areas could be assigned ratios equal to that of the poorest state. Allotment ratio formulas could be specified to achieve whatever degree and amount of equalization desired by Congress.

6. The matching requirement for those states which are allotted additional federal funds as a result of the equalization process should be eased.

The suggested change is to make the matching ratio equal to the ratio of the allotment without equalization to the allotment with equalization for a state whose allotment is increased as a result of the equalization provision. For such a state, which spends all of its federal funds, the amount of state-local expenditures required for matching purposes would equal the state's allotment without equalization.

7. Further research should be undertaken to develop a better measure of state fiscal capacity than per capita personal income. Such a measure could be used in all grants-in-aid which include an equalization provision.

8. Further research should be conducted using computer programs to simulate the fiscal implications of grant-in-aid programs.

This research technique can be used to measure equalization, to project future state allotments, and to examine alternative legislative proposals.

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APPENDICES

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Appendix A
Figure I : Smith-Hughes and George-Barden Acts: Intergovernmental Fiscal Relations, 1964 A-1

Figure II : The Vocational Education Act of 1963 (Section 4): Intergovernmental Fiscal Relations, 1965 A-2

Appendix B Vocational Education, Acts, Rules, and Regulations B-1

APPENDIX FIGURE I

Smith-Hughes and George-Barden Acts: Intergovernmental Fiscal Relations, 1964

This Figure depicts for 1964 the major elements of the intergovernmental fiscal relations associated with the Smith-Hughes and George-Barden Acts. The top band illustrates the legislative and budgetary processes, at the federal, state, and local levels, which determine the amount of public funds that are made available for vocational education. The processes and interactions shown are only the most significant ones; the figure of necessity has been simplified and excludes some influences at all three levels of government. The middle band shows the flow of funds through the mechanisms of intergovernmental fiscal relations which ultimately results in the expenditures listed in the lower band. The Smith-Hughes and George-Barden Acts require that for each program area in each state, state and/or local funds match the expenditure of federal funds at least dollar for dollar.

FIGURE ABBREVIATIONS:

S-H = Smith-Hughes Act
The subscripts 1 through 3 denote the portion of S-H funds authorized, appropriated, and alloted for:
1. Agriculture
2. Trades and industry and home economics
3. Teacher Training

G-B = George-Barden Act
The subscripts 1 through 7 denote the portion of G-B funds authorized, appropriated, and allotted for:
1. Agriculture
2. Distributive occupations
3. Home economics
4. Trades and industry
5. Fishery occupations
6. Health occupations
7. Technical education

FIGURE SYMBOLS:

Flows of Influence	
Occurring only once	⇨
Annual or continuing	➡
Flows of Money	→
Elements of Influence or Action	
Occurring only once	▣
Permanent	■
Annual or continuing	□

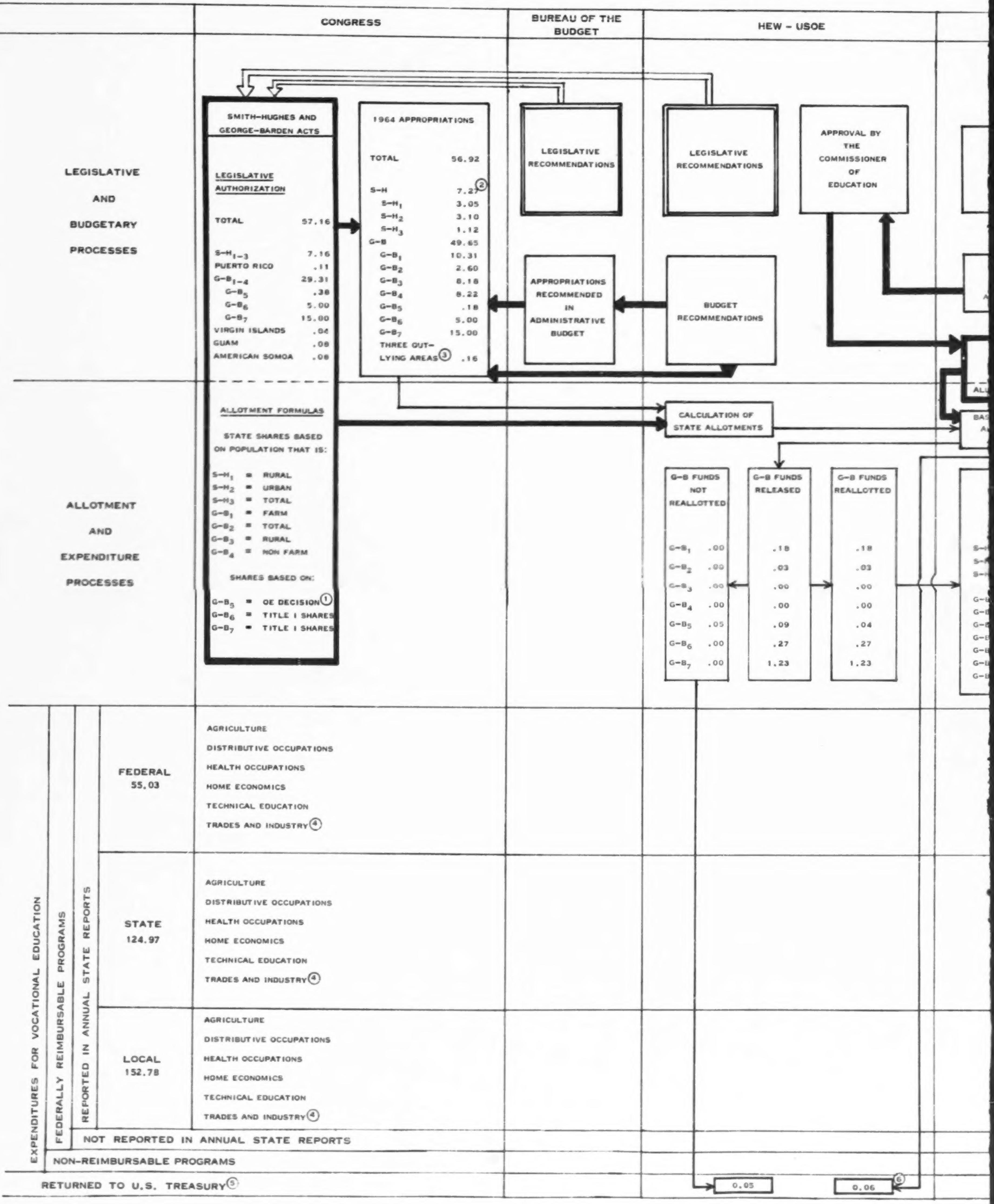
FOOTNOTES:

[1] The Commissioner of Education determines the allotments to States upon the recommendation of the Department of the Interior.
[2] Includes $110,000 to Puerto Rico.
[3] Includes $40,000 for American Samoa, $80,000 for Guam, and $40,000 for Virgin Islands allotted by law to total field of vocational education.
[4] Includes expenditures on fishery occupations.
[5] Any federal funds not used in the fiscal year for which they are appropriated must be returned to the U.S. Treasury. Aside from the three sources shown, funds may be returned to the U.S. Treasury if an audit at the state or local level discloses that federal funds were not spent in accordance with the rules and regulations of the acts.
[6] Includes $10,000 of S-H agriculture funds which were released but could not be reallotted, and $40,000 of vocational education funds allotted to American Samoa which were released but were not reallotted.
[7] The difference between final federal allotments and federal expenditure.
[8] Components may not add to total because of rounding.

SOURCE: Vocational and Technical Education, 1964.

SMITH-HUGHES AND GEORGE-BARDEN ACTS: INTERGOVERNMENTAL FISCAL RELATIONS, 196

(IN MILLIONS OF DOLLARS)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HEW - USOE
LEGISLATIVE AND BUDGETARY PROCESSES
SMITH-HUGHES AND GEORGE-BARDEN ACTS
LEGISLATIVE AUTHORIZATION
TOTAL 57.16
S-H1-3 7.16
PUERTO RICO .11
G-B1-4 29.31
G-B5 .38
G-B6 5.00
G-B7 15.00
VIRGIN ISLANDS .04
GUAM .08
AMERICAN SOMOA .08
1964 APPROPRIATIONS
TOTAL 56.92
S-H 7.27②
S-H1 3.05
S-H2 3.10
S-H3 1.12
G-B 49.65
G-B1 10.31
G-B2 2.60
G-B3 8.18
G-B4 8.22
G-B5 .18
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G-B7 15.00
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LEGISLATIVE RECOMMENDATIONS
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BUDGET RECOMMENDATIONS
ALLOTMENT AND EXPENDITURE PROCESSES
ALLOTMENT FORMULAS
STATE SHARES BASED ON POPULATION THAT IS:
S-H1 = RURAL
S-H2 = URBAN
S-H3 = TOTAL
G-B1 = FARM
G-B2 = TOTAL
G-B3 = RURAL
G-B4 = NON FARM
SHARES BASED ON:
G-B5 = OE DECISION①
G-B6 = TITLE I SHARES
G-B7 = TITLE I SHARES
CALCULATION OF STATE ALLOTMENTS
G-B FUNDS NOT REALLOTTED
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EXPENDITURES FOR VOCATIONAL EDUCATION
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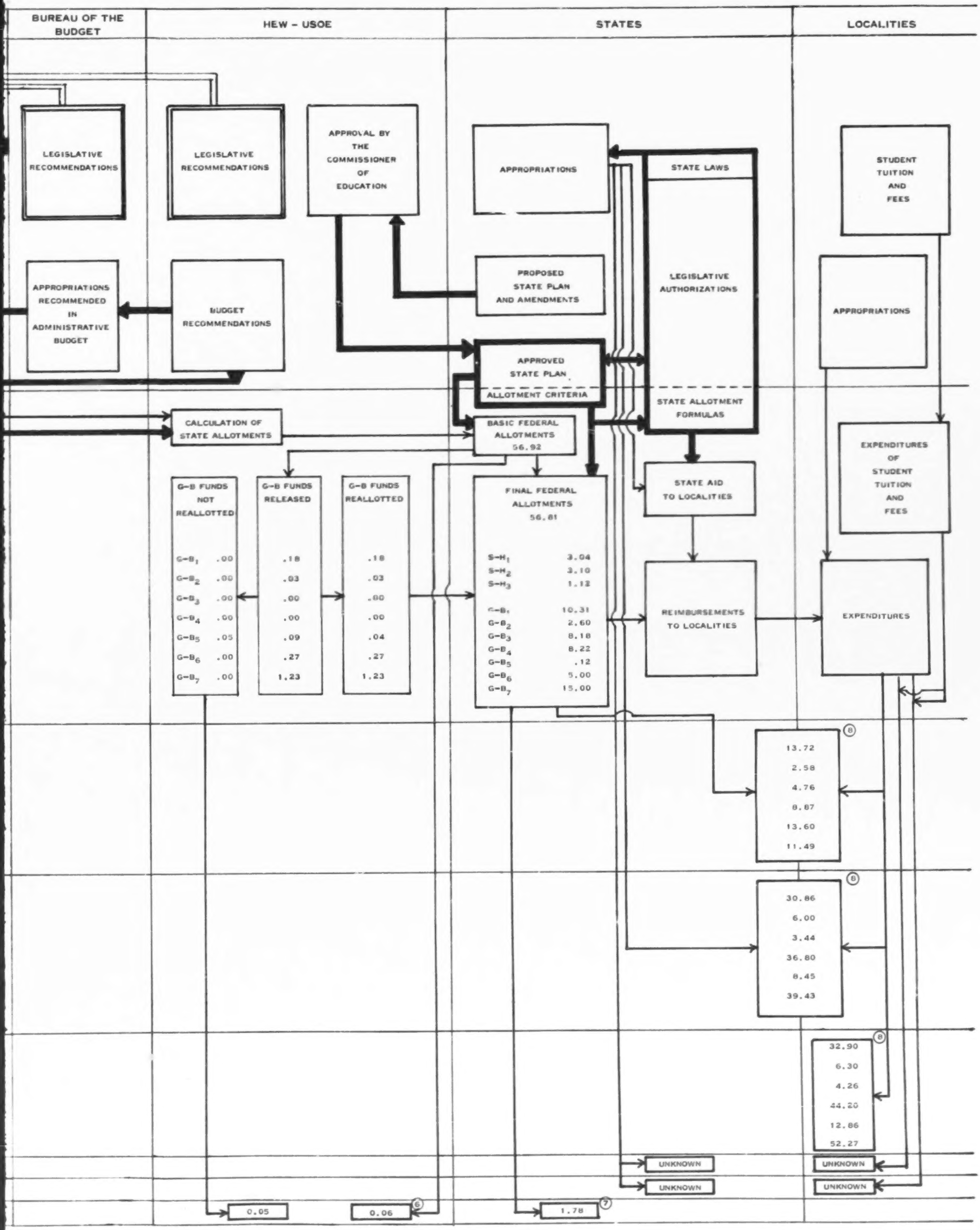
HES AND GEORGE-BARDEN ACTS: INTERGOVERNMENTAL FISCAL RELATIONS, 1964

(IN MILLIONS OF DOLLARS)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STATES
LOCALITIES
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APPROPRIATIONS
STATE LAWS
STUDENT TUITION AND FEES
PROPOSED STATE PLAN AND AMENDMENTS
LEGISLATIVE AUTHORIZATIONS
APPROPRIATIONS RECOMMENDED IN ADMINISTRATIVE BUDGET
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CALCULATION OF STATE ALLOTMENTS
BASIC FEDERAL ALLOTMENTS 56.92
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$G-B_6$ .00
$G-B_7$ .00
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G-B FUNDS REALLOTTED
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.00
.04
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1.23
FINAL FEDERAL ALLOTMENTS 56.81
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REIMBURSEMENTS TO LOCALITIES
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13.60
11.49
⑧
30.86
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3.44
36.80
8.45
39.43
⑧
32.90
6.30
4.26
44.20
12.86
52.27
UNKNOWN
UNKNOWN
UNKNOWN
UNKNOWN
0.05
0.06 ⑥
1.78 ⑦

APPENDIX FIGURE II

The Vocational Education Act of 1963 (Section 4): Intergovernmental Fiscal Relations, 1965

This figure depicts for 1965 the major elements of the intergovernmental fiscal relations associated with the 1963 Vocational Education Act (Section 4). The top band illustrates the legislative and budgetary processes at the Federal, State, and local levels which determine the amount of public funds that are made available for vocational education. The processes and interactions shown are only the most significant ones; the figure of necessity has been simplified and excludes some influences at all three levels of government. The middle band shows the flow of funds through the mechanisms of intergovernmental fiscal relations which ultimately results in the expenditures listed in the lower band. The 1963 Act requires that for each expenditure purpose in each State, State and/or local funds match the expenditure of Section 4 Federal funds at least dollar for dollar.

This figure excludes the Work-Study Program (Section 13 of the 1963 Act) and the Residential Vocational Education Schools Program (Section 14). For fiscal 1965 $30,000,000 was authorized by the Act for both Sections 13 and 14; $5,000,000 was appropriated for the Work-Study Program and $2,799,794 was expended.

FIGURE SYMBOLS:

Flows of Influence	
Occurring only once	⇨
Annual or continuing	➡
Flows of Money	→
Elements of Influence or Action	
Occurring only once	⧈
Permanent	▣
Annual or continuing	□

FOOTNOTES:

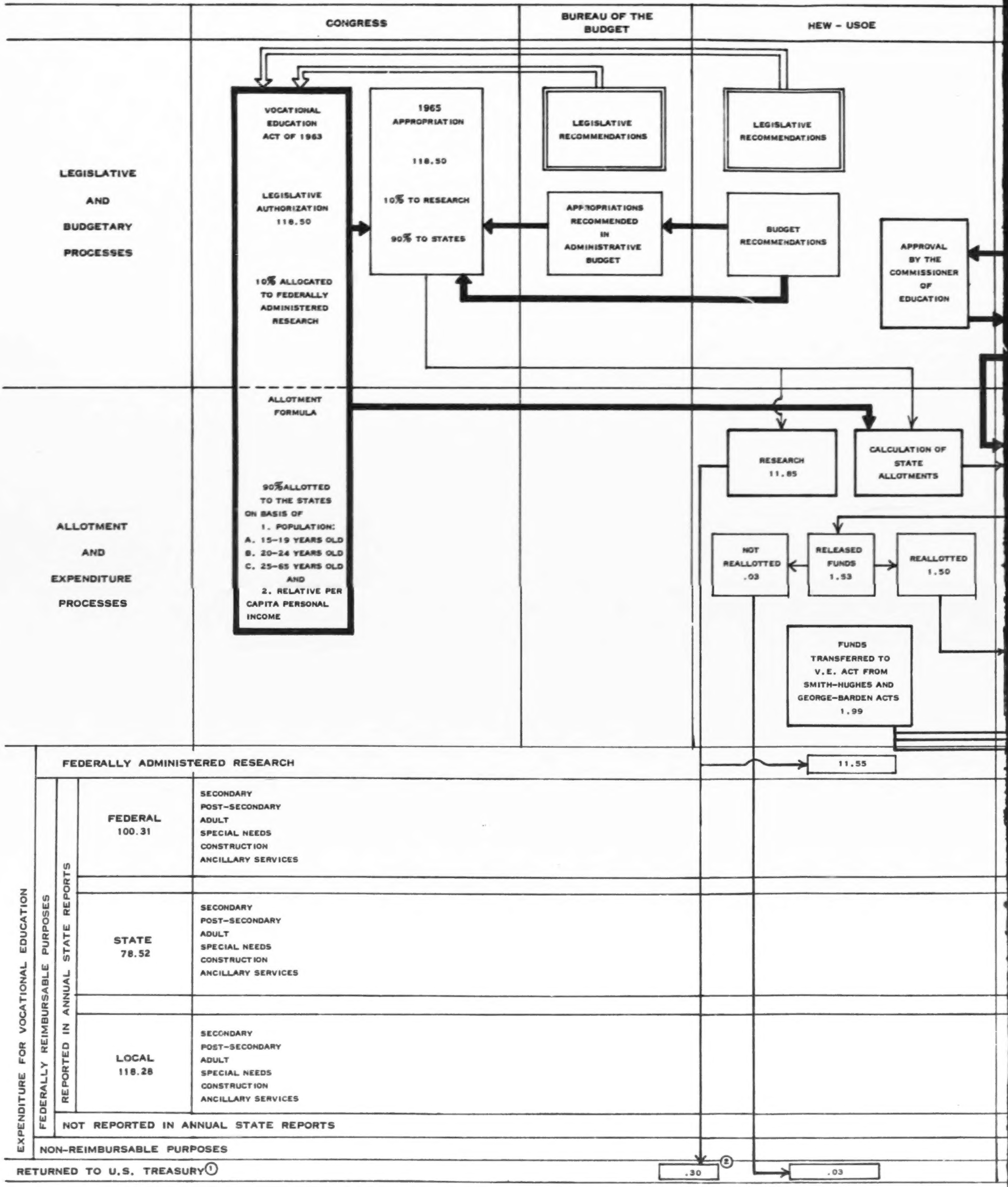
[1] Any Federal funds not used in the fiscal year for which they are appropriated must be returned to the U.S. Treasury. Aside from the three sources shown, funds may be returned to the U.S. Treasury if an audit at the State or local level discloses that Federal funds were not spent in accordance with the rules and regulations of the Act.

[2] Unpublished figure supplied by Dr. David S. Bushnell, Director, Division of Adult and Vocational Research, Bureau of Research, U.S. Office of Education..

SOURCE: Preliminary data supplied by the Division of Vocational and Technical Education, Bureau of Adult and Vocational Education, U.S. Office of Education.

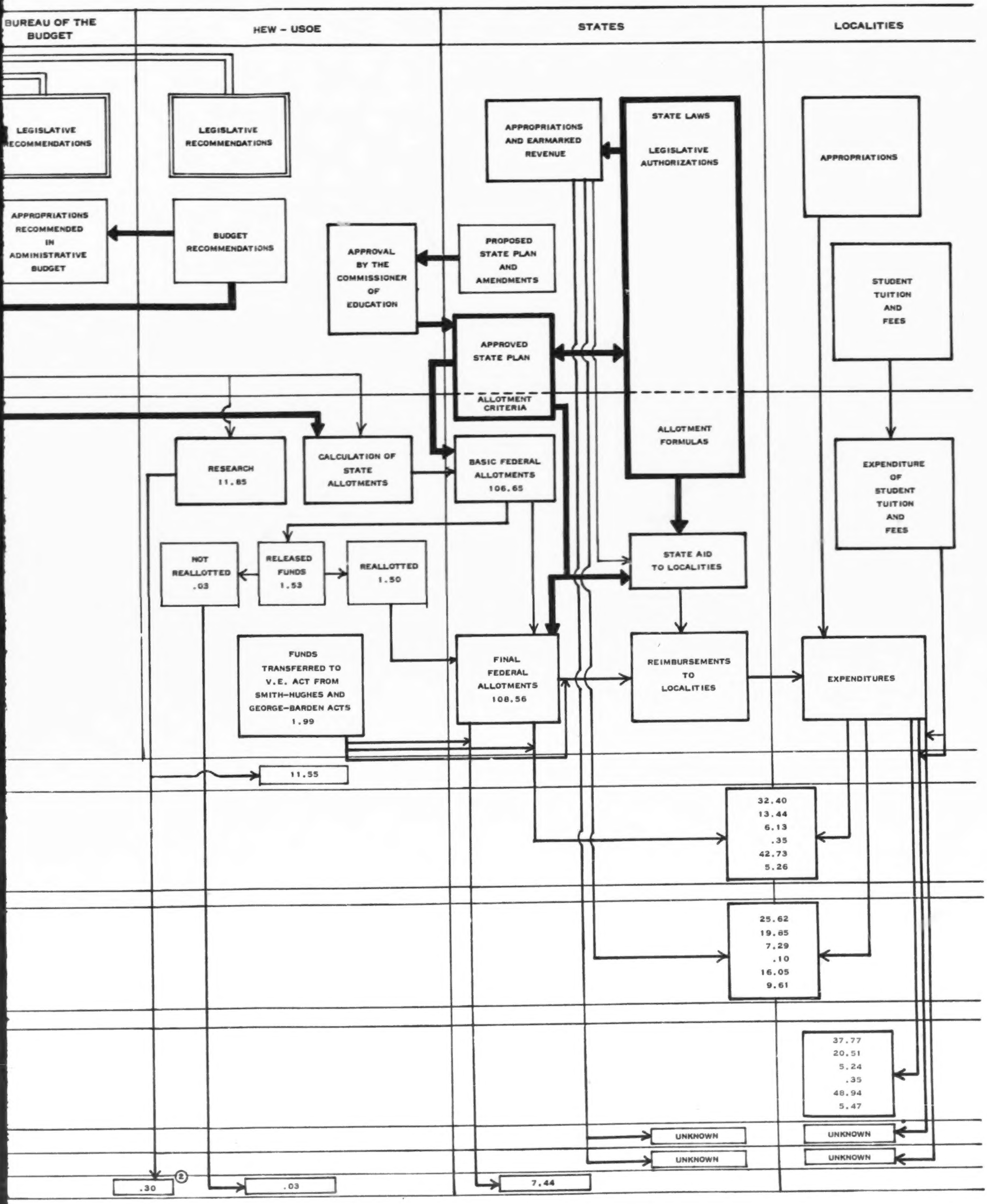
THE VOCATIONAL EDUCATION ACT OF 1963 (SECTION 4): INTERGOVERNMENTAL FISCAL REL

(IN MILLIONS OF DOLLARS)


CONGRESS
BUREAU OF THE BUDGET
HEW - USOE
LEGISLATIVE AND BUDGETARY PROCESSES
VOCATIONAL EDUCATION ACT OF 1963
LEGISLATIVE AUTHORIZATION 118.50
10% ALLOCATED TO FEDERALLY ADMINISTERED RESEARCH
1965 APPROPRIATION
118.50
10% TO RESEARCH
90% TO STATES
LEGISLATIVE RECOMMENDATIONS
APPROPRIATIONS RECOMMENDED IN ADMINISTRATIVE BUDGET
LEGISLATIVE RECOMMENDATIONS
BUDGET RECOMMENDATIONS
APPROVAL BY THE COMMISSIONER OF EDUCATION
ALLOTMENT AND EXPENDITURE PROCESSES
ALLOTMENT FORMULA
90% ALLOTTED TO THE STATES ON BASIS OF
1. POPULATION:
A. 15-19 YEARS OLD
B. 20-24 YEARS OLD
C. 25-65 YEARS OLD
AND
2. RELATIVE PER CAPITA PERSONAL INCOME
RESEARCH 11.85
CALCULATION OF STATE ALLOTMENTS
NOT REALLOTTED .03
RELEASED FUNDS 1.53
REALLOTTED 1.50
FUNDS TRANSFERRED TO V.E. ACT FROM SMITH-HUGHES AND GEORGE-BARDEN ACTS 1.99
FEDERALLY ADMINISTERED RESEARCH
11.55
EXPENDITURE FOR VOCATIONAL EDUCATION
FEDERALLY REIMBURSABLE PURPOSES
REPORTED IN ANNUAL STATE REPORTS
FEDERAL 100.31
STATE 78.52
LOCAL 118.28
SECONDARY
POST-SECONDARY
ADULT
SPECIAL NEEDS
CONSTRUCTION
ANCILLARY SERVICES
NOT REPORTED IN ANNUAL STATE REPORTS
NON-REIMBURSABLE PURPOSES
RETURNED TO U.S. TREASURY①
.30
②
.03

EDUCATION ACT OF 1963 (SECTION 4): INTERGOVERNMENTAL FISCAL RELATIONS, 1965

(IN MILLIONS OF DOLLARS)


BUREAU OF THE BUDGET
HEW - USOE
STATES
LOCALITIES
LEGISLATIVE RECOMMENDATIONS
LEGISLATIVE RECOMMENDATIONS
APPROPRIATIONS RECOMMENDED IN ADMINISTRATIVE BUDGET
BUDGET RECOMMENDATIONS
APPROPRIATIONS AND EARMARKED REVENUE
STATE LAWS
LEGISLATIVE AUTHORIZATIONS
ALLOTMENT FORMULAS
APPROPRIATIONS
APPROVAL BY THE COMMISSIONER OF EDUCATION
PROPOSED STATE PLAN AND AMENDMENTS
APPROVED STATE PLAN
ALLOTMENT CRITERIA
STUDENT TUITION AND FEES
RESEARCH 11.85
CALCULATION OF STATE ALLOTMENTS
BASIC FEDERAL ALLOTMENTS 106.65
EXPENDITURE OF STUDENT TUITION AND FEES
NOT REALLOTTED .03
RELEASED FUNDS 1.53
REALLOTTED 1.50
STATE AID TO LOCALITIES
FUNDS TRANSFERRED TO V.E. ACT FROM SMITH-HUGHES AND GEORGE-BARDEN ACTS 1.99
FINAL FEDERAL ALLOTMENTS 108.56
REIMBURSEMENTS TO LOCALITIES
EXPENDITURES
11.55
32.40
13.44
6.13
.35
42.73
5.26
25.62
19.85
7.29
.10
16.05
9.61
37.77
20.51
5.24
.35
48.94
5.47
UNKNOWN
UNKNOWN
UNKNOWN
UNKNOWN
.30
②
.03
7.44

APPENDIX B

VOCATIONAL EDUCATION ACTS, RULES, AND REGULATIONS

Smith-Hughes Act - February 23, 1917, Public Law 347, 64th Congress.

George-Barden Act
a. Title I- Vocational Education in Agriculture, Home Economics, Trades and Industry, and Distributive Occupations - Act of June 8, 1936, Public Law 673, 74th Congress as amended by Act of August 1, 1946, Public Law 586, 79th Congress - and Fishery Occupations - Act of August 8, 1956, Public Law 1027, 84th Congress.
b. Title II - Vocational Education in Practical Nursing - Act of August 2, 1956, Public Law 911, 84th Congress
c. Title III - Area Vocational Education Programs (Technical Education) - Title VIII, National Defense Education Act of 1958, Public Law 85-864.

Supplementary Acts
a. Section 1 of the Act of March 3, 1931, relating to vocational education in Puerto Rico, Public Law 791, 71st Congress.
b. The Act of March 18, 1950, relating to vocational education in the Virgin Islands, Public Law 462, 81st Congress.
c. Section 9 of the Act of August 1, 1956, relating to vocational education in Guam, Public Law 896, 84th Congress.
d. Section 2 of the Act of September 25, 1962 - relating to vocational education in American Samoa, Public Law 87-688.

The Vocational Education Act of 1963 - Part A of Public Law 88-210.

The following are pertinent sections of the Act:

DECLARATION OF PURPOSE

SECTION 1. It is the purpose of this part to authorize Federal grants to States to assist them to maintain, extend, and improve existing programs of vocational education, to develop new programs of vocational education, and to provide part-time employment for youths who need the earnings from such employment to continue their vocational training on a full-time basis, so that persons of all ages in all communities of the State - those in high school, those who have completed or discontinued their formal education and are preparing to enter the labor market, those who have already entered the labor market but need to upgrade their skills or learn new ones, and those with special educational handicaps - will have ready access to vocational training or retraining which is of high quality, which is realistic in the light of actual or anticipated opportunities for gainful employment, and which is suited to their needs, interests, and ability to benefit from such training.

AUTHORIZATION OF APPROPRIATIONS

SEC. 2. There are hereby authorized to be appropriated for the fiscal year ending June 30, 1964, $60,000,000, for the fiscal year ending June 30, 1965, $118,500,000, for the fiscal year ending June 30, 1966, $177,500,000, and for the fiscal year ending June 30, 1967, and each fiscal year thereafter, $225,000,000, for the purpose of making grants to States as provided in this part.

ALLOTMENTS TO STATES

SEC. 3. (a) Ninety per centum of the sums appropriated pursuant to section 2 shall be allotted among the States on the basis of the number of persons in the various age groups needing vocational education and the per capita income in the respective States as follows: The Commissioner shall allot to each State for each fiscal year-

(1) An amount which bears the same ratio to 50 per centum of the sums so appropriated for such year, as the product of the population aged fifteen to nineteen, inclusive, in the State in the preceding fiscal year and the State's allotment ratio bears to the sum of the corresponding products for all the States; plus

(2) An amount which bears the same ratio to 20 per centum of the sums so appropriated for such year, as the product of the population aged twenty to twenty-four, inclusive, in the State in the preceding fiscal year and the State's allotment ratio bears to the sum of the corresponding products for all the States; plus

(3) An amount which bears the same ratio to 15 per centum of the sums so appropriated for such year, as the product of the population aged twenty-five to sixty-five, inclusive, in the State in the preceding fiscal year and the State's allotment ratio bears to the sum of the corresponding products for all the States; plus

(4) an amount which bears the same ratio to 5 per centum of the sums so appropriated for such year, as the sum of the amounts allotted to the State under paragraphs (1), (2), and (3) for such year bears to the sum of the amounts allotted to all the States under paragraphs (1), (2), and (3) for such year.

(b) The amount of any State's allotment under subsection (a) for any fiscal year which is less than $10,000 shall be increased to that amount, the total of the increases thereby required being derived by proportionately reducing the allotments to each of the remaining States under such subsection, but with such adjustments as may be necessary to prevent the allotment of any of such remaining States from being thereby reduced to less than that amount.

(c) The amount of any State's allotment under subsection (a) for any fiscal year which the Commissioner determines will not be required for such fiscal year for carrying out the State's plan approved under section 5 shall be abailable for reallotment from time to time, on such dates during such year as the Commissioner may fix, to other States in proportion to the original allotments to such States under such subsection for such year, but with such proportionate amount for any of such other States being reduced to the extent it exceeds the sum the Commissioner estimates such State needs and will be able to use under the approved plan of such State for such year and the total of such reductions shall be similarly reallotted among the States not suffering such a reduction. Any amount reallotted to a State under this subsection during such year shall be deemed part of its allotment under subsection (a) for such year.

(d)(1) The "allotment ratio" for any State shall be 1.00 less the product of (A) .50 and (B) the quotient obtained by dividing the per capita income for the State by the per capita income for all the States (exclusive of Puerto Rico, Guam, American Samoa, and the Virgin Islands), except that (i) the allotment ratio shall in no case be less than .40 or more than .60, and (ii) the allotment ratio for Puerto Rico, Guam, American Samoa, and the Virgin Islands shall be .60.

(2) The allotment ratios shall be promulgated by the Commissioner for each fiscal year, between July 1 and September 30 of the preceding fiscal year, except that for the fiscal year ending June 30, 1964, such allotment ratios shall be promulgated as soon as possible after the enactment of this part. Allotment ratios shall be computed on the basis of the average of the per capita incomes for a State and for all the States (exclusive of Puerto Rico, Guam, American Samoa, and the Virgin Islands) for the three most recent consecutive fiscal years for which satisfactory data is available from the Department of Commerce.

(3) The term "per capita income" for a State or for all the States (exclusive of Puerto Rico, Guam, American Samoa, and the Virgin Islands) for any fiscal year, means the total personal income for such State, and for all such States, respectively, in the calendar year ending in such fiscal year, divided by the population of such State, and of all such States, respectively, in such fiscal year.

(4) The total population and the population of particular age groups of a State or of all the States shall be determined by the Commissioner on the basis of the latest available estimates furnished by the Department of Commerce.

USES OF FEDERAL FUNDS

SEC. 4 (a) Except as otherwise provided in subsection (b), a State's allotment under section 3 may be used, in accordance with its approved State plan, for any or all of the following purposes:

(1) Vocational education for persons attending high school;

(2) Vocational education for persons who have completed or left high school and who are available for full-time study in preparation for entering the labor market;

(3) Vocational education for persons (other than persons who are receiving training allowances under the Manpower Development and Training Act of 1962 (Public Law 87-415), the Area Redevelopment Act (Public Law 87-27), or the Trade Expansion Act of 1962 (Public Law 87-794)) who have already entered the labor market and who need training or retraining to achieve stability or advancement in employment;

(4) Vocational education for persons who have academic, socio-economic, or other handicaps that prevent them from succeeding in the regular vocational education program;

(5) Construction of area vocational education school facilities;

(6) Ancillary services and activities to assure quality in all vocational education programs, such as teacher training and supervision, program evaluation, special demonstration and experimental programs, development of instructional materials, and State administration and leadership, including periodic evaluation of State and local vocational education programs and services in light of information regarding current and projected manpower needs and job opportunities.

(b) At least 33 1/3 per centum of each State's allotment for any fiscal year ending prior to July 1, 1968, and at least 25 per centum of each State's allotment for any subsequent fiscal year shall be used only for the purposes set forth in paragraph (2) or (5), or both, of subsection (a), and at least 3 per centum of each State's allotment shall be used only for the purposes set forth in paragraph (6) of subsection (a), except that the Commissioner may, upon request of a State, permit such State to use a smaller percentage of its allotment for any year for the purposes specified above if he determines that such smaller percentage will adequately meet such purposes in such State.

(c) Ten per centum of the sums appropriated pursuant to section 2 for each fiscal year shall be used by the Commissioner to make grants to colleges and universities, and other public or nonprofit private agencies and institutions, to State boards, and with the approval of the appropriate State board, to local educational agencies, to pay part of the cost of research and training programs and of experimental, developmental, or pilot programs developed by such institutions, boards or agencies, and designed to meet the special vocational education needs of youths, particularly youths in economically depressed communities who have academic, socioeconomic, or other handicaps that prevent them from succeeding in the regular vocational education programs.

STATE PLANS

SEC. 5. (a) A State which desires to receive its allotments of Federal funds under this part shall submit through its State board to the Commissioner a State plan, in such detail as the Commissioner deems necessary, which --

(1) designates the State board as the sole agency for administration of the State plan, or for supervision of the administration thereof by local educational agencies; ...

(2) sets forth the policies and procedures to be followed by the State in allocating each such allotment among the various uses ...

(3) provides minimum qualifications for teachers, teacher-trainers, supervisors, directors, and others having responsibilities under the State plan;

(4) provides for entering into cooperative arrangements with the system of public employment offices in the State,...

(5) sets forth such fiscal control and fund accounting procedures as may be necessary to assure proper disbursement of, and accounting for, Federal funds paid to the State (including such funds paid by the State to local educational agencies) under this part; ...

(7) provides for making such reports in such form and containing such information as the Commissioner may reasonably require to carry out his functions under this part, and for keeping such records and for affording such access thereto as the Commissioner may find necessary to assure the correctness and verification of such reports.

(b) The Commissioner shall approve a State plan which fulfills the conditions specified in subsection (a), ...

PAYMENTS TO STATES

SEC. 6. (a) Any amount paid to a State from its allotment under section 3 for the fiscal year ending June 30, 1964, shall be paid on condition that there shall be expended for such year, in accordance with the State plan approved under section 5 or the State plan approved under the Vocational Education Act of 1946 and supplementary vocational education Acts, or both, an amount in State or local funds, or both, which at least equals the amount expended for vocational education during the fiscal year ending June 30, 1963, under the State plan approved under the Vocational Education Act of 1946 and supplementary vocational education Acts.

(b) Subject to the limitations in section 4 (b), the portion of a State's allotment for the fiscal year ending June 30, 1965, and for each succeeding year, allocated under the approved State plan for each of the purposes set forth in paragraphs (1), (2), (3), (4), and (6) of section 4(a) shall be available for paying one-half of the State's expenditures under such plan for such year for each such purpose.

(c) The portion of a State's allotment for any fiscal year allocated under the approved State plan for the purpose set forth in paragraph (5) of section 4(a) shall be available for paying not to exceed one-half of the cost of construction of each area vocational education school facility project.

(d) Payments of Federal funds allotted to a State under section 3 to States which have State plans approved under section 5 (as adjusted on account of overpayments or underpayments previously made) shall be made by the Commissioner in advance on the basis of such estimates, in such installments, and at such times, as may be reasonably required for expenditures by the States of the funds so allotted.

...

SEC. 10. ...

(a) any portion of any amount allotted (or apportioned) to any State for any purpose under such titles, Act, or Acts for the fiscal year ending June 30, 1964, or for any fiscal year thereafter, may be transferred to and combined with one or more of the other allotments (or apportionments) of such State for such fiscal year under such titles, Act, or Acts, or under section 3 of this part and used for the purposes for which, and subject to the conditions under which, such other allotment (or apportionment) may be used,if the State board requests, in accordance with regulations of the Commissioner, that such portion be transferred and shows to the satisfaction of the Commissioner that transfer of such portion in the manner requested will promote the purpose of this part.

Administration of Vocational Education: Federal Allotments to States -- Rules and Regulations*

The following are pertinent sections of the Rules and Regulations:

Federal funds allotted to the State under section 3 of the 1963 Act shall not be used to supplant State or local funds, and, to the extent practical, shall be used to increase the amounts of State and local funds that would in the absence of such Federal funds be made available for the purposes in section 4(a) of the

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*Reprinted from the Federal Register, August 28, 1964.

1963 Act....

RESPONSIBILITY OF COMMISSIONER. To aid in disclosing situations where Federal funds may be or might have been allocated or used in a manner contrary to the State's policies and procedures set forth in its State plan pursuant to paragraph (a) of this section, the Commissioner shall initially consider the information submitted by the States pursuant to paragraph (b) of this section, including data indicating whether the total amount of State and local funds estimated for expenditure or expended for vocational education in the fiscal year under question appears to be less than that expended for the previous fiscal year, or that such amount was not increased to a degree commensurate with the current needs for vocational education in the State. In the event of such a disclosure the Comissioner or his designated representatives shall obtain such further information as he may require to determine whether a State has in fact complied with such policies and procedures.

Only public funds may be used for expenditures under the plan. In addition to appropriated funds, such funds may include funds derived from donations by private organizations or individuals which are deposited in accordance with State or local law to the account of the State board or local educational agency without such conditions or restrictions on their use as would negate their character as public funds.

Tuition and fees collected from students enrolled in a course may not be used as State or local funds for the purpose of matching the Federal funds.

Except as provided in paragraph (b) of this section, matching of Federal funds with State or local funds for each of the purposes set forth in Sec. 104.41 may be on a State-wide basis. It is not necessary that Federal funds be matched by State or local funds for each individual school or class - only the totals for the State are to be considered.

Matching of Federal funds allocated for construction of area vocational education school facilities (See Sec. 104.41 (b)(5)) must be on a project basis. This means that every dollar of Federal funds must be matched with a dollar of State or local funds for each area vocational education school facility project supported by Federal funds in the State.

Federal funds allotted under Title III of the George-Barden Act shall be paid on conditions that the total amount of State and local funds to be spent in any year for vocational education programs operated under the provisions of the Smith-Hughes Act and titles I and II of the George-Barden Act may not be reduced below the amount of such funds expended under such programs and reported to the Commissioner for the fiscal year immediately preceding that in which the State first uses funds under title III, except that such reduction below the amount expended in such preceding fiscal year may be made as long as

(a) In making such reduction, the amount of State and local funds used to match each of the several allotments under the Smith-Hughes Act and titles I and II of the George-Barden Act is not reduced below the amount needed for dollar-for-dollar matching of each allotment, and

(b) An amount of State and local funds at least equal to the amount of the total reduction is to be expended under title III.